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**SYM1**

**SMOKING AND PSYCHOPATHOLOGY: MECHANISMS AND TREATMENTS**

Jessica W. Cook, PhD, University of Wisconsin School of Medicine and Public Health, William S. Middleton Memorial VA Hospital; Jennifer W. Tidey, PhD, Brown University; Sandra J. Japuntich, PhD, VA Boston Healthcare System, Boston University School of Medicine; Andrew M. Busch, PhD, The Miriam Hospital, The Alpert Medical School of Brown University

In recent years, smoking among those without mental illness has declined while the smoking rate among those with mental illness have remained steady. Thus, there exists a health disparity such that individuals with mental illness are more likely to smoke and less successful at tobacco cessation than those without. More research is needed to identify mechanisms that maintain smoking in those with mental illness and treatment targets and models for this population. This symposium will provide information on differential reactions to nicotine content in two different mental health populations: individuals with major depression (MDD) and individuals with posttraumatic stress disorder (PTSD). Three different modes of treatment will be evaluated: reduced nicotine cigarettes, behavioral activation for depressed mood and smoking, and proactive connection to tobacco cessation resources. Dr. Cook will present on an experimental study examining the effects of different smoking manipulations on positive and negative affect responses in smokers with PTSD, MDD, and controls. Dr. Tidey will present on the effects of nicotine on cigarette use, dependence, CESD score, and abstinence-induced craving scores at baseline (p's < 0.01), but did not differ from non-depressed smokers on other smoking or demographic characteristics. Baseline depression moderated the effects of nicotine content on CESD scores such that RNC cigarettes with ≤ 2.4 mg/g nicotine reduced CESD scores in depressed but not non-depressed smokers (p < 0.05). Baseline depression did not moderate the effects of nicotine content on smoking rates, dependence or abstinence-induced craving, and means indicated that RNC cigarettes reduced these measures in both groups relative to NNC cigarettes. CONCLUSION: In depressed smokers, RNC cigarettes reduced depression and led to decreases in smoking, dependence and abstinence-induced craving that were similar to non-depressed smokers, suggesting that a nicotine reduction policy would have broad beneficial effects on smoking in the US. Funding: Supported by U54DA031659.

**SYM1B**

**EFFECTS OF REDUCED-NICOTINE CONTENT CIGARETTES ON DAILY SMOKING RATES, DEPENDENCE, AND DEPRESSION SYMPTOMS IN DEPRESSED VS. NON-DEPRESSED SMOKERS**

Jennifer Tidey, PhD1,2, Neal Benowitz, MD, Rachel Cassidy, PhD, Rachel Denlinger, MPH, Sarah Demody, BS1, David Drobes, PhD, Dorothy Hatsuaki, PhD1, Joseph Koopmeiners, PhD, Lauren Pacek, PhD, Ryan Vandrey, PhD, Eric Donny, PhD, Brown University; University of Pittsburgh; Veterans Affairs to Dr. Cook. This research was also supported by 1K05CA139871 from the National Cancer Institute to Dr. Baker.

**SYM1A**

**INFLUENCE OF ACUTE NICOTINE ADMINISTRATION ON AFFECT IN SMOKERS WITH DEPRESSION AND POSTTRAUMATIC STRESS DISORDER**

Jessica Cook, PhD1,2, Timothy Baker, PhD1, Jeanne Beckham, PhD, MS1, Miles McFall, PhD1, University of Wisconsin School of Medicine and Public Health, William S. Middleton Memorial VA Medical Center, Durham VA Medical Center, Duke University Medical Center, University of Washington School of Medicine and Public Health, VA Puget Sound Healthcare System

Little is known about how affective processes influence smoking in individuals with posttraumatic stress disorder (PTSD) and major depressive disorder (MDD). The goal of this research was to experimentally compare the effects of different smoking manipulations on positive and negative affect responses in smokers with PTSD or MDD versus smokers with no psychiatric disorder. Participants were US Veterans who were regular smokers (N=158): 52 with PTSD; 51 with MDD, and 55 with no psychiatric disorder. During three positive and three negative mood induction trials (counterbalanced over two days of testing), participants smoked either a nicotine-reduced cigarette (NIC-), a denicotinized cigarette (NIC-), or held a pen in this within subjects design. Participants were not informed which cigarette type they were smoking. Positive and negative affect were measured via the Positive and Negative Affect Schedule (PANAS) at baseline, and at 3 time points following the mood induction. Results revealed significant 3-way interactions of Time x Nicotine Condition x PTSD and Time x Nicotine Condition x MDD for negative affect response during the negative mood induction ([p < 0.05]. There were also significant 3-way interactions of Time x Nicotine Condition x PTSD and Time x Nicotine Condition x MDD for positive affect response during the negative mood induction ([p < 0.01 . There was also a 2-way interaction of Time x Nicotine Condition on positive affect response to the positive mood induction across the full sample ([p < 0.001). In sum, results showed that during the negative mood induction, there were nicotine stimulus effects on both positive and negative affect responses that varied as a function of PTSD and MDD: e.g., in those with PTSD, both NIC+ and NIC- enhanced negative affect recovery versus pen holding. Amongst all smokers, NIC+ enhanced positive affect response to the positive mood induction more than did NIC-. Results reveal affective modulation effects that may motivate smoking amongst smokers in general, and amongst those with PTSD and MDD diagnoses.

Funding: This research was supported by K08DA021311 from National Institute on Drug Abuse and by Merit Review Award 101CX00056 from the US Department of Veterans Affairs to Dr. Cook. This research was also supported by 1K05CA139871 from the National Cancer Institute to Dr. Baker.

Corresponding Author: Jessica Cook, PhD, University of Wisconsin School of Medicine and Public Health; William S. Middleton Memorial VA Medical Center

**SYM1**

2016 SYMPOSIA

2016 Symposia

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Corresponding Author: Jessica Cook, PhD, University of Wisconsin School of Medicine and Public Health; William S. Middleton Memorial VA Medical Center

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**SYM1**

**SMOKING AND PSYCHOPATHOLOGY: MECHANISMS AND TREATMENTS**

Jessica W. Cook, PhD, University of Wisconsin School of Medicine and Public Health, William S. Middleton Memorial VA Hospital; Jennifer W. Tidey, PhD, Brown University; Sandra J. Japuntich, PhD, VA Boston Healthcare System, Boston University School of Medicine; Andrew M. Busch, PhD, The Miriam Hospital, The Alpert Medical School of Brown University

In recent years, smoking among those without mental illness has declined while the smoking rate among those with mental illness have remained steady. Thus, there exists a health disparity such that individuals with mental illness are more likely to smoke and less successful at tobacco cessation than those without. More research is needed to identify mechanisms that maintain smoking in those with mental illness and treatment targets and models for this population. This symposium will provide information on differential reactions to nicotine content in two different mental health populations: individuals with major depression (MDD) and individuals with posttraumatic stress disorder (PTSD). Three different modes of treatment will be evaluated: reduced nicotine cigarettes, behavioral activation for depressed mood and smoking, and proactive connection to tobacco cessation resources. Dr. Cook will present on an experimental study examining the effects of different smoking manipulations on positive and negative affect responses in smokers with PTSD, MDD, and controls. Dr. Tidey will present on the effects of nicotine on cigarette use, dependence, CESD score, and abstinence-induced craving scores at baseline ([p < 0.01), but did not differ from non-depressed smokers on other smoking or demographic characteristics. Baseline depression moderated the effects of nicotine content on CESD scores such that RNC cigarettes with ≤ 2.4 mg/g nicotine reduced CESD scores in depressed but not non-depressed smokers ([p < 0.05]. Baseline depression did not moderate the effects of nicotine content on smoking rates, dependence or abstinence-induced craving, and means indicated that RNC cigarettes reduced these measures in both groups relative to NNC cigarettes. CONCLUSION: In depressed smokers, RNC cigarettes reduced depression and led to decreases in smoking, dependence and abstinence-induced craving that were similar to non-depressed smokers, suggesting that a nicotine reduction policy would have broad beneficial effects on smoking in the US. Funding: Supported by U54DA031659.

Corresponding Author: Jennifer Tidey, PhD, Brown University
PROACTIVE TOBACCO TREATMENT FOR PRIMARY CARE PATIENTS WITH MENTAL ILLNESS

Sandra Japuntich, PhD1; Scott Sheehan, MD, MPH2; Anne Joseph, MD, MPH, Barbara Clothier, MS3; Siamak Noorbaloochi, PhD4; Elisheva Danan, MD, MPH; Diana Burgess, PhD5; Erin Rogers, MPH6; Steven Fu, MD, MS6; Erin Siddiqi, MBBS, MPH7; Virginia Healthcare System, Boston University School of Medicine and Public Health, 8VA New York Harbor Healthcare System, 9New York University School of Medicine, 10University of Minnesota Medical School, 11Minneapolis VA Health Care System

INTRODUCTION: Individuals with mental illness use tobacco at higher rates and have more difficulty quitting than those without. Few models exist for how to treat smokers with mental illness in medical settings. METHOD: This study is a secondary analysis of the Victory Over Tobacco study, a pragmatic randomized controlled trial of proactive treatment (proactive outreach + connection to telephone counseling or VA cessation resources) vs. usual care in 4 VA medical centers (N=5123, M age 56.1, 94.2% male, 46.8% ICD-9 chart diagnosis of mental illness). We assessed the effectiveness of treatment assignment in participants with and without mental illness on 6 months prolonged abstinence, measured at one year follow-up. We then tested differences by mental health diagnosis group on motivation to quit, self-efficacy and provider intervention around tobacco use in the past year. RESULTS: Those without a mental health diagnosis showed a significant benefit of Proactive Care (OR=1.45, 95% CI=1.21-1.73) whereas the intervention was less effective in those with mental illness (OR=1.18, 95% CI=0.98-1.41). Those with mental illness reported significantly more medical visits in the past year as well as being more often advised to quit and recommended medication and non-medication cessation treatments (p<0.05), they reported less self-efficacy to quit than those without mental illness (p<0.001). CONCLUSIONS: Those with diagnosed mental illness benefitted less from proactive outreach regarding tobacco use. Veterans with mental illness reported receiving many opportunities to connect to cessation resources during VA medical appointments and may not need additional outreach. This group may also require more intensive cessation interventions targeting self-efficacy to improve cessation rates.

Funding: This work was supported by the Department of Veterans Affairs, Veterans Health Administration, Office of Research and Development, Health Services Research and Development (IAB-05-303), and Clinical Sciences Research and Development (1K2C2X00918-01A1).

Corresponding Author: Sandra Japuntich, PhD, VA Boston Healthcare System; Boston University School of Medicine and Public Health

BEHAVIORAL ACTIVATION FOR SMOKING CESSATION AND MOOD MANAGEMENT FOLLOWING A CARDIAC EVENT: RESULTS OF A PILOT RANDOMIZED CONTROLLED TRIAL

Andrew Busch, PhD1, Erin Tooley, PhD2; Shira Dunsiger, PhD2; John Fani Srour, MD3; Sherry Pagoto, PhD2; Christopher Kahler, PhD2; Belinda Borrelli, PhD2; The Miriam Hospital, The Alpert Medical School of Brown University, 4Roger Williams University, 5The Miriam Hospital, Brown University School of Public Health, 6The Warren Alpert Medical School of Brown University, Rhode Island Hospital, 7University of Massachusetts Medical School, 8Brown University School of Public Health, 9Boston University Henry M Goldman School of Dental Medicine

Smoking cessation after hospitalization for Acute Coronary Syndrome (ACS) reduces subsequent mortality. Depressed mood is a major barrier to cessation post-ACS and independently predicts post-ACS mortality. We integrated evidence-based smoking cessation counseling with Behavioral Activation based mood management for ACS patients (Behavioral Activation Treatment for Cardiac Smokers; BAT-CS). The current study tested feasibility, acceptability, and initial efficacy of BAT-CS vs. a Standard of Care control (SC). METHODS: Participants were recruited during inpatient hospitalization for ACS and were randomly assigned to BAT-CS (1 in-hospital and 5-9 post-discharge sessions) or SC (1 in-hospital session and 5 mailed packets of self-help materials). We report recruitment and retention rates as indicators of feasibility. Acceptability was measured using the 8-item Client Satisfaction Questionnaire (CSQ). All participants were offered 8 weeks of the nicotine patch. Biochemically confirmed smoking abstinence (7-day point prevalence and 7-day PPA) and mood outcomes were collected at end-of-treatment (12 weeks) and 24 week follow-up. Outcomes were analyzed in an intent-to-treat manner using longitudinal regression models with generalized estimating equations and Cox survival analysis. RESULTS: 59 participants (28 BAT-CS, 31 SC; 90% Caucasian, 27% female, mean age = 56, mean FTND = 4.8) were recruited over 42 weeks. Retention rates were above 80% at all follow-ups. Treatment satisfaction was high in both conditions (CSQ above 30 in both groups). There was a small, non-significant between group effect on 7-day PPA at 24 weeks (48% BAT-CS vs. 45% SC; adj, odds ratio 1.27, 95% CI: 0.41-3.93). In a survival analysis, time to first lapse after discharge was significantly longer in BAT-CS than SC (p<0.03). There were small to medium size between group effects favoring BAT-CS at 24 weeks on positive affect (p=0.04), negative affect (p=0.02), and depression symptoms (p=0.13); CONCLUSIONS: The design of this study provided feasible and acceptable. Results support testing the efficacy of BAT-CS in a larger efficacy trial. NCT01964898.

Funding: This work was supported by the National Heart, Lung, and Blood Institute (K23HL107391).

Corresponding Author: Andrew Busch, PhD, The Miriam Hospital, The Alpert Medical School of Brown University

SMOKELESS TOBACCO CONSUMPTION, DISEASE BURDEN, DEPENDENCE, AND CESSATION: A DIVERSE AND GLOBAL PERSPECTIVE

Kamran Siddiqi, MBBS, MRCP, FFPH, MPH, PhD, University of York, UK; Aishwarya Vidyasaragaran, MBBS, MPH, University of York, UK; Rumana Huque, PhD, University of Dhaka, Bangladesh; Nasir Mushhag, MPH, PhD, University of Oklahoma, US; Omara Dogar, MPH, University of York, UK; Lekan Ayo-Yusuf, BDS MSc, MPH, PhD, Sefako Makgatho Health Sciences University, South Africa

Smokeless tobacco (ST) products are consumed worldwide and pose a major health threat. Despite its widespread use and substantial disease burden, the issue remains a neglected one. A major obstacle in agreeing on a global approach to control ST is the diverse nature of its products available globally. These differ in their toxicity and addictiveness depending upon their carcinogen, nicotine, and pH levels, which themselves are dependent on their preparation methods, additional ingredients, and consumption behaviours. Therefore, ST isn’t a single entity, and any global effort to control ST should reflect on this diversity. This symposium brings together leading researchers from Africa, Asia, Europe, and North America to first highlight the diversity in ST, its use, health risks and dependence and then to discuss initiatives to control ST use. In first presentation, Siddiqi will first describe the diverse range of ST products, their use and then highlight associated risks and burden of disease across the globe. In second presentation, Vidyasaragaran and Huque will present their findings on the distribution and determinants of nicotine dependency among ST users in India and Bangladesh, respectively. Their study, for the first time, will present data on cotinine concentration in ST users from anywhere in Asia. In third presentation, NM will describe his research on ST dependence evaluating different approaches and measures of dependence among ST users. In fourth presentation, Dogar will describe her work on developing and evaluating a bespoke behavioural support intervention to support ST cessation. Her research with ST users of South Asian-origin will highlight differences in their beliefs, attitudes and behaviours in two different settings, Pakistan and the UK. In final presentation, Ayo-Yusuf will present, for the first time from African region, data from four rounds of GYTS surveys conducted in South Africa since 1999. He will report on the association between tobacco initiation (with or without ST) and becoming an established regular cigarette smoker in adolescence. The symposium will conclude with a discussion on policy and knowledge gaps that are hampering progress on ST control in Low- and Middle-income Countries.

Justification: The topic of smokeless tobacco and the presentation proposed will inform the application of the Framework Convention for Tobacco Control to regulate and reduce smokeless tobacco demand in the world

Funding: Medical Research Council, UK; Leeds City Council, UK; SA National Research Foundation

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SMOKELESS TOBACCO CONSUMPTION, DISEASE BURDEN, DEPENDENCE, AND CESSATION: A DIVERSE AND GLOBAL PERSPECTIVE

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Funding: Medical Research Council, UK; Leeds City Council, UK; SA National Research Foundation

Corresponding Author: Kamran Siddiqi, MBBS, MRCP, FFPH, MPH, PhD, University of York, UK, kamran.siddiqi@york.ac.uk, ARRC Building, University of York, Heslighton, York, YO10 5DD, United Kingdom
SYM2A

SMOKELESS TOBACCO PRODUCTS, THEIR USE, HEALTH RISKS, AND BURDEN OF DISEASE - A GLOBAL PICTURE

Kamran Siddiqi, MBBS, MRCP, FFPH, MPH, PhD*, Omara Dogar, MBBS, MPH, Sarwat Shah, MBBS, MPH, University of York, UK

Smokeless tobacco (ST), consumed worldwide, consists of a diverse range of products, varying in their composition, methods of preparation and consumption, and associated health risks. In this paper, we present a global picture highlighting the diverse range of ST products available worldwide, adult prevalence data from 115 countries, summarised risk estimates and burden of disease due to its consumption of ST by adults. We conducted a systematic review to find country-specific prevalence of smokeless tobacco consumption across the globe and a series of systematic reviews and meta-analyses on epidemiological studies to produce summarised disease-specific risk estimates for cancers and cardiovascular diseases due to ST. We also estimated the burden attributable to ST use in adults as a proportion of the disability-adjusted life-years (DALYs) lost and deaths reported in the 2016 Global Burden of Disease Study used on figures from 115 countries, Mauritania had the highest prevalence of ST consumption among females (28.3%), followed by Bangladesh (27.9%), Madagascar (19.6%), India (18.4%), and Bhutan (17.3%). Among males, Myanmar (51.4%), Nepal (37.9%), India (32.9%), Uzbekistan (31.8%), and Bangladesh (26.4%) had the highest rates. Based on meta-analyses, the estimated pooled relative risk for mouth (oral cavity, tongue, and lip) cancers was 3.4 (95% CI 2.2–5.2); for cancers of the pharynx, it was 2.2 (95% CI 1.6–3.2); and for oesophageal cancers, it was 2.17 (95% CI 1.7–2.8). For ischaemic heart disease, one large case–control study conducted in 52 countries showed a statistically significant risk (adj. OR 1.57, 95% CI 1.2–2.0) among ST users. In 2010, smokeless tobacco use led to 1.7 million DALYs lost and 62,283 deaths due to cancers and, based on data from the benchmark INTERHEART study, 4.7 million DALYs lost and 204,309 deaths from ischaemic heart disease. Over 85% and 74% of this burden was in South-East Asia and India, respectively. ST results in considerable, potentially preventable, global morbidity and mortality from cancer. The World Health Organization needs to consider incorporating regulation of ST into its Framework Convention for Tobacco Control.

Funding: Medical Research Council, UK

Corresponding Author: Kamran Siddiqi, MBBS, MRCP, FFPH, MPH, PhD, University of York, UK

SYM2B

SALIVARY COTININE CONCENTRATION AND ITS DETERMINANTS AMONG SOUTH ASIAN SMOKELESS TOBACCO USERS: FINDINGS FROM TWO SURVEYS IN BANGLADESH AND INDIA

Aishwarya Vidyasagar, MBBS, MPH*, Rumana Huque, PhD*, Sarwat Shah, MBBS, MPH, Kamran Siddiqi, MBBS, MRCP, FFPH, MPH, PhD, University of York, UK, ‘University of Dhaka, Bangladesh

More than 80% of global burden of disease due to smokeless tobacco (ST) is among South Asians; yet there is very limited data on the level of ST dependence and its determinants in this population. We, for the first time, aimed to explore associations between salivary cotinine (surrogate for nicotine dependence) and various demographic, and tobacco use characteristics among ST users in Bangladesh & India. Sub-national surveys were conducted in Dhaka & New Delhi, recruiting a purposive sample of 200 and 233 ST users, respectively. Among ST users (≥ 18 years), currently using one or more ST products were recruited from - September-December, 2014 in Dhaka and February-April, 2015 in Delhi. Face-to-face interviews were conducted, and saliva samples were collected from all participants. While cotinine levels in the Dhaka samples were measured using liquid chromatography with tandem mass spectrometry, immunaoassays were used to analyse samples in Delhi. Differences in mean salivary cotinine across strata of independent variables were evaluated using t-tests (for dichotomous variables) and Tukey pairwaise comparisons (for variables with >2 categories). Simple linear regression was conducted to test associations between cotinine and independent variables. Mean cotinine was 463ng/ml±/271among users in Dhaka. Of the demographic & tobacco use variables, ‘times per day ST used in past 7 days’, ‘duration of ST use in months’, and ‘times to first chew/dip after rising up’ were significantly related to mean cotinine. Variables such as form of ST, urge and strength of urge to use ST were not associated with cotinine levels. In Delhi, mean cotinine was 156.52ng/ml (±310.49). As values were skewed, square root transformations were applied. Analyses showed a significant difference in mean cotinine between those with a TDS-based (Tobacco Dependence Screener) dependence diagnosis and those who were classified as non-dependent. This is the first study to measure cotinine among ST users in South Asia and look for any associations. It highlights the need to raise awareness of the harms of ST use and to treat ST addiction.

Funding: Leeds City Council, UK

Corresponding Author: Aishwarya Vidyasagar, MBBS, MPH, University of York, UK

SYM2C

APPROACHES TO MEASURE DEPENDENCE AMONG SMOKELESS TOBACCO USERS

Nasir Mushtaq, MPH, PhD*, Laura Beebe, PhD, University of Oklahoma, US

Tobacco dependence is not a single criterion but a complex entity that is based on various dimensions. Tobacco dependence scales evaluate single or multiple underlying constructs constituting dependence. Smoking dependence measures are traditionally categorized into three different types, measures based on clinical definition of dependence; Fagerström Tolerance Questionnaire (FTQ) and its variants; and multidimensional measures of dependence. Unlike various dependence measures used to assess dependence among smokers, there is inadequate evidence of employing different approaches to measure dependence among ST users. The aim of this study is to evaluate ST dependence measures based on different dependence criteria. Study was based on data collected from a community based sample of exclusive ST users living in Oklahoma (n=95). Participants completed different nicotine dependence measures and provided information related to their socio-demographic and tobacco use characteristics. Dependence measures evaluated for this study included; Tobacco Dependence Screener (TDS), Oklahoma Scale for Smokeless Tobacco Dependence (OSSTD), Fagerström test of nicotine dependence (FTND-ST), and brief measures of dependence including Heaviness of Smoking in Early Days (HSED) and Smokeless Tobacco Dependence Index (STDI) Concurrent validity and reliability of different dependence measures was assessed. Salivary cotinine concentration was used as a criterion variable. ST dependence measures assessed different dimensions of dependence. TDS used clinical criteria of dependence. FTND-ST and brief measures assessed physical dependence, whereas OSSTD measured multiple aspects of dependence. TDS, FTND-ST, and STDI demonstrated acceptable reliability with Cronbach’s a ranging from 0.76 for TDS to 0.70 for STDI. OSSTD had better reliability than other dependence measures (α=0.9). All the measures were positively associated with cotinine concentration. At an optimal cutoff score of TDS 5+, ST users classified as dependent had significantly higher cotinine concentration and higher FTND-ST scores. These dependence measures assess unique aspects of dependence and each has its utility in distinct clinical and research settings.

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SYM2D

BEHAVIOURAL SUPPORT INTERVENTION FOR SMOKELESS TOBACCO CESSATION IN SOUTH ASIANS (BISCA): ITS DEVELOPMENT AND FEASIBILITY TESTING IN PAKISTAN AND IN THE UK

Omara Dogar, MPH**, Kamran Siddiqi, MBBS, MRCP, FFPH, MPH, PhD*, Cath Jackson, PhD1, Rukhsana Bibi, BA (Hons), MPH1, Ian Kellar, PhD2, University of York, UK, ‘University of Leeds, UK

People of South Asian-origin are responsible for more than three-quarters of all the smokeless tobacco (ST) consumption; yet there is little evidence on the effect of ST cessation interventions in this population. South Asians use highly addictive and hazardous ST products that have a strong socio-cultural dimension. We designed a bespoke behavioural support (BS) intervention to support South Asians in quitting ST and then evaluated its acceptability, feasibility and potential impact in Pakistan and in the UK. We conducted two literature reviews to identify determinants of ST use among South Asians and behaviour change techniques (BCTs) likely to modify these, respectively. Two iterative consensus development workshops helped in selecting potent BCTs for BS and designing activities and materials to deliver the intervention (ISHTI) and Smokeless Tobacco Dependence Index (STDI) at five different sites (1 Pakistan, 4 UK). All BS sessions were audiotaped and analysed for adherence to content and the quality of interaction (fidelity index). In-depth interviews with16 participants and five advisors assessed acceptability and feasibility.
SYM2E
INITIATION OF SMOKELESS TOBACCO USE IS ASSOCIATED WITH REGULAR SMOKING AMONG SOUTH AFRICAN ADOLESCENTS
Lekan Ayo-Yusuf, BDS, MPhD, Sefako Makgatho Health Sciences University, Medunsa, South Africa

OBJECTIVE: To determine the difference in prevalence of regular smoking among South African adolescents (Grades 8-10) who had initiated tobacco use with smokeless tobacco (ST), cigarettes, or both ST and cigarettes. METHODS: Data was obtained from the combination of the 1999, 2002, 2008 and 2011 South African Global Youth Tobacco use Surveys. Based on the age at which each participant first tried a cigarette and/or ST, participants were classified into one of three groups: (a) cigarette initiators; (b) ST initiators; and (c) dual initiators. Poisson regression was used in comparing prevalence ratios between these groups of ever-smokers with regards current regular smoking (i.e. smoked for ≥20 days past month), while controlling for survey year and known risk factors such as gender, parental smoking and friend smoking. RESULTS: There was no observed significant change in the prevalence of current regular smoking between 1999 and 2011. Of the ever cigarette smokers (n=11,127), 88.3% (95% CI=87.5%-89.9%) were cigarette initiators, while 5.1% (95% CI=4.4%-5.9%) were ST initiators and 6.2% (95% CI=5.3%-7.2%) were dual initiators. The prevalence of current smoking among cigarette initiators was 54.5% (95% CI=52.3%-56.7%). In an adjusted analysis, compared to cigarette initiators, dual initiators (Adjusted prevalence ratio [aPR]=1.19; 95% CI=1.08-1.31) and ST initiators (aPR=1.12; 95% CI=1.01-1.21) were more likely to be current regular smokers. CONCLUSIONS: The findings of the study suggest that ST and dual initiators in the general South African adolescent population are significantly more likely to become established smokers than cigarette initiators. Therefore, the promotion of ST as a harm reduction product might result in population harm in South Africa. Funding: SA National Research Foundation

SYM3B
NICOTINE, TOBACCO, AND BRAIN DEVELOPMENT
Frances Leslie, PhD, University of California, Irvine

Adolescence is a sensitive developmental period of enhanced vulnerability to nicotine-containing products, including tobacco and e-cigarettes, as well as other abused drugs. Data from both preclinical and clinical studies suggest that this adolescent sensitivity has strong neurobiological underpinnings, and reflects active limbic system maturation. This presentation will provide preclinical evidence that nictinic acetylcholine receptors regulate critical aspects of adolescent brain development and that nicotine has unique neurochemical and behavioral effects during this critical period of development. In a self-administration test of drug reinforcement, nicotine intake was found to be higher in adolescent male rats than adults, partly as a result of drug-induced increases in non-specific locomotor activity. Brief, low dose nicotine treatment (4 daily intravenous injections of 60 μg/kg) in male rats during early adolescence (postnatal days 28-31) also induced unique changes in brain serotonergic (5-HT) and dopamine (DA) systems which were not seen after similar treatment of adults. This early adolescent nicotine treatment induced 5-HT release and activation of postynaptic 5-HT1A receptors, which led to lasting enhancement of DA receptor function. Increased D2 DA receptor signaling resulted in enhanced quinpirole-induced locomotor activity and acquisition of cocaine self-administration, which were both still evident 10 days after pretreatment. Nicotine pretreatment also enhanced self-administration of methamphetamine and ethanol in adolescents but not adults. Co-administration of nicotine increased intravenous self-administration of ethanol in adolescent males, but not adults, and resulted in subsequent enhancements of oral ethanol intake. These data indicate that a nicotine treatment paradigm, designed to model the early phase of smoking or e-cigarette use in adolescent males, induces lasting changes in brain systems that mediate locomotor function and reward, and may lead to enhanced sensitivity to other abused drugs. Of the neurobiology of this stage of brain maturation will inform better development of age-specific biomarkers and treatments for exposure and abuse of addictive substances such as nicotine.

Funding: NIDA Grant 1R01DA019318.

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**SYM3C**
THE LONG-TERM IMPACT OF ADOLESCENT NICOTINE EXPOSURE ON COGNITION

Thomas Gould, PhD, Temple University

Adolescent nicotine use is a serious health issue. The Center for Disease Control and Prevention reports that every day 3,800 adolescents smoke their first cigarette, that e-cigarette use in this age group has tripled in the last year and is now higher than conventional cigarette use, and that nearly 90% of adult smokers initiated smoking by age 18. While it is clear that tobacco product use and nicotine addiction contributes to substantial health problems in the United States, increasing evidence suggests that adolescent nicotine exposure may also cause health problems beyond those commonly associated with tobacco products. Specifically, adolescent nicotine use may produce long-term cognitive deficits. Early adolescent tobacco use was associated with memory deficits and late adolescent smokers had cognitive deficits that emerged after initiation of smoking. These effects were also seen for secondhand tobacco smoke exposure. Children 8-15 years old exposed to secondhand smoke had higher rates of attention-deficit/hyperactivity disorder. Long-lasting deficits in cognition associated with adolescent tobacco use are especially troubling because multiple mental illnesses that have symptoms that include changes in cognition are also associated with higher rates of tobacco use. Thus, adolescent tobacco use may not only lead to addiction but it may contribute to adult cognitive deficits and exasperate cognitive symptoms associated with mental illness. An initial study in mice found that adolescent nicotine exposure is sufficient to produce adult deficits in hippocampus-dependent learning measured with contextual fear conditioning. Preliminary data suggest that these deficits may be associated with altered brain acetylcholinergic function. Thus, this presentation will examine behavioral effects of adolescent nicotine exposure on adult learning, factors that modulate these effects, and cholinergic manipulations that ameliorate associated deficits in contextual fear conditioning.

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**SYM3D**
ADDITION AND THE ADOLESCENT SMOKER

Mark Rubinstein, MD, University of California, San Francisco, Benioff Children’s Hospital

Evidence suggests that adolescents may be more susceptible to nicotine addiction compared with adults, experiencing symptoms of dependence at significantly lower levels of exposure. There is likely something unique about this period of development that influences an adolescent’s response to nicotine exposure. In particular, brain maturation occurs continuously throughout adolescence and into early adulthood and adolescence is a time of developmental changes in the mesocorticolimbic brain regions which are implicated in the drug reward process. Perhaps because of these developmental changes, adolescent neurophysiology appears to be more vulnerable to addiction when exposed to nicotine. Moreover, the neuroadaptations involved with the development of drug cue reactivity are thought to progress more quickly in adolescents than in adults and occur early in the trajectory of adolescent smoking. Lastly, adolescents appear to respond to variations in nicotine clearance differently from adults in a way which may increase susceptibility to certain subgroups of adolescents. We will present data from several other studies which support the evidence that adolescents may respond differently to nicotine exposure and may be more susceptible to the effects of nicotine. Specifically, we will review data from our studies on adolescents using methodologies related to nicotine metabolism and functional imaging.

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**SYM4**
EVALUATING CURRENT E-CIGARETTE MARKETING THROUGH A LEGAL LENS

Kim Wagoner, PhD, Wake Forest University; Brittny Keller, MPH, Ohio State University; Annice Kim, PhD, RTI International; Elizabeth G. Klein, PhD, MPH, Ohio State University

Electronic nicotine delivery systems (ENDS) manufacturers and retailers are using a wide range of marketing channels and messages to promote ENDS use. Key promotional channels include magazine advertisements, social media content (paid and unpaid), websites, television, radio, and point-of-sale marketing. Messaging has included themes relating to smoking cessation, reduced risk, ability to use “everywhere,” popularity/sex appeal, and more. Some of these messages may violate the law (particularly when the proposed Deeming Rule goes into effect) and/or provide misinformation to consumers. Thus, there is a critical need to track and assess the marketing channels and various types of claims made regarding ENDS. This symposium will provide new research findings across a diverse spectrum of methods to characterize the amount of marketing exposures in youth, young adults, and adults, then deconstruct the legal status of the claims made through print, electronic, and in-person channels. This work provides important baseline information for the FDA as it prepares to finalize and then enforce its Deeming Rule. First, Dr. Wagoner will present results of a nationally representative sample of youth and adults to characterize ENDS marketing exposures. Next, Ms. Keller will provide results on a content analysis for health and reward cues in print advertising found in popular magazines, and provide comparisons to cigarette and smokeless ads. Dr. Kim will present findings from studies of ENDS-content on social media, particularly Twitter. Finally, Dr. Klein will present a content analysis of the health themes present in the websites of manufacturers and retail sellers of ENDS. As Discussant, Mr. Berman will summarize the legal implications for ENDS marketing under current law and the proposed Deeming Rule; he will also provide insights on the implications of these data for tobacco control regulatory policy and decision-making.

Justification: This symposium will provide insight into current marketing practices for e-cigarettes across a diversity of media channels, and will have regulatory policy implications for tobacco control policies, including those from the FDA.

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**SYM4A**
CONTENT ANALYSIS OF HEALTH CLAIMS FROM ONLINE E-CIGARETTE SELLERS

Elizabeth Klein, PhD, MPH*, Micah Berman, JD, Natalie Hemmerich, JD, Sandi Htt, BA, Michael Slater, PhD, The Ohio State University

Electronic nicotine delivery systems (ENDS), or e-cigarettes, are currently being heavily marketed online, and this advertising channel is anticipated to continue expanding. Little in-depth study of health claims in online ENDS advertising has been conducted. ENDS are not currently subject to federal regulations, but an anticipated regulation will provide the FDA with the authority to regulate ENDS advertising. The objective of this study is to identify key health and related themes about ENDS in online marketing. METHODS: In December 2014, a systematic search protocol was employed with 3 popular search engines using six terms: 1) e-cigarettes, 2) e-cigs, 3) e-juice, 4) e-cigarette, 4) e-liquid, 5) e-hookah, and 6) vape pen. Eligible sites included manufacturers which produce ENDS devices or e-liquid and retailers that sell ENDS but do not produce them. Ineligible sites were review sites, blogs, or other non-commercial sites. All businesses within the first three pages of the search engine were examined; all eligible sites were archived and comprehensively reviewed for any reference to health claims within the website domain. All health claims were reviewed by two separate reviewers for implicit and explicit
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**SYM4B**

**HOW ARE ELECTRONIC CIGARETTES ADVERTISED IN POPULAR MAGAZINES?**

Brittney Keller, MPH*, Katherine Friedman, Katherine Yates, BS, Amy Ferketich, PhD, The Ohio State University

**BACKGROUND:** Substantial research has described how cigarettes are marketed in print media and how the appeals made in these advertisements influence decisions to smoke. With the growing trend of electronic cigarette (e-cigarette) use, more money is being applied to e-cigarette advertisements. **OBJECTIVE:** This study examined e-cigarettes advertising in magazines, describing their placement, size, and content compared to advertisements for cigarettes and smokeless tobacco (ST) products. **METHODS:** Tobacco advertisements were identified from all issues of five popular magazines over a 15-month period (January 2014 - March 2015). Two independent coders with excellent inter-coder reliability (Krippendorff’s alpha: 0.78-1.00) content analyzed all ads for social cues, reward cues (e.g., taste), attractiveness cues (e.g., sex appeal), and health cues. Presence of promotions, ad size, and placement within the magazine were recorded. **RESULTS:** Marketing within magazine: E-cigarette ads were more likely to be featured on the front or back inside covers of magazines (23.1% of all ads) than ads for cigarettes (11.3%, p=0.041) or ST (10.2%, p=0.026). They were also more likely to span two or more pages than cigarette ads (20.0% and 0%, respectively; p=0.011). Advertisement appeals: E-cigarette ads were less likely to make taste appeals than cigarette ads (4.0% and 64.7%, p<0.001). E-cigarette ads did not differ from cigarette ads regarding attractiveness cues or health cues. Compared to ST ads, a greater proportion of e-cigarette ads featured health cues (32.0% and 0%, p=0.001), sex appeal (28.3% and 5.1%, p=0.01), and well-dressed models (24.0% and 3.6%, p=0.009). **CONCLUSIONS:** E-cigarette ads were featured more prominently in magazines than cigarette or ST ads with respect to size and placement. In general, the appeals used to sell e-cigarettes in magazines were similar to those in cigarette ads, indicating that they may be trying to attract the same target audience as cigarettes. Though e-cigarettes and ST are both increasingly being positioned as safer or more discreet alternatives to cigarettes, the ads for these products appear to be largely marketed to different audiences.

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**SYM4C**

**ADOLESCENTS’ AND ADULTS’ EXPOSURE TO ADVERTISING OF ELECTRONIC NICOTINE DELIVERY SYSTEMS (ENDS)**

Kimberly Wagoner, DrPH, MPH*; Dave Reboussin, PhD; Jennifer Cornachione, PhD; Kimberly Wiseeman, MS; Danielle Kelley, MPH; Seth Noar, PhD; Erin Sutfin, PhD; 1Wake Forest University; 2University of North Carolina

**BACKGROUND:** ENDS are widely available and advertised through multiple channels including retail outlets, magazines, television, radio, and online. Little is known about consumers’ exposure to ENDS advertising through these various channels. We sought to examine sources of exposure to ENDS advertising among adolescents (13-17), young adults (18-25) and adults (26+). **METHODS:** Adolescents (N=1125) and young adults (N=809)/adults (N=4205) were recruited through 2 nationally representative phone surveys that assessed participants’ exposure to any ENDS advertisement by channel. **RESULTS:** Most participants had been exposed to at least one ENDS advertisement in their lifetime (adoles: 73.6%; young adults: 79.3%; adults: 80%). Exposure to advertisements through 1 or 2 channels was most common (adoles: 87%; young adults: 75.7%; adults: 61.7%). Television was the largest source of ad exposure for all age groups (adoles: 73.7%; young adults: 70.4%; adults: 66.1%). Other prominent channels of exposure included gas stations/convenience stores (adoles: 16%; young adults: 22.1%; adults: 18.6%), online/websites (adoles: 14.5%; young adults: 17.8%; adults: 8.9%), radio (adoles: 13.7%; young adults: 18.2%; adults: 12.6%), and magazines (adoles: 17.7%; young adults: 25.8%). Current adult ENDS users were more likely than non-users to report exposure to ENDS advertising (user: 86.2%, non-user: 76.4%). Fewer adolescent ENDS users reported ad exposure compared to ENDS non-users (user: 59.5%; non-user: 74.4%). There were no differences for young adults (user: 80.2%, non-user: 79.5%). **CONCLUSION:** Exposure to ENDS advertising was common in all age groups and through a variety of channels. Adolescents had similar exposure as both young adults and adults, which was especially high through television. Regulators should consider restricting ENDS advertising on TV given that cigarette advertising has been banned on TV for decades. Considering the prevalence of exposure, content analyses of ENDS advertising across channels is needed to fully understand how ENDS are being marketed to consumers, the claims being made in ENDS advertisements, and how consumers, especially adolescents, are processing and responding to them.

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**SYM4D**

**E-CIGARETTE INFORMATION ON SOCIAL MEDIA: INSIGHTS INTO CHALLENGES FOR MARKETING REGULATIONS AND COMPLIANCE EFFORTS**

Annice Kim, PhD*, Jamie Guillory, PhD, Paul Ruddlle, MS, Rob Chew, MS, James Nonnemaker, PhD, RTI International

E-cigarette marketing and use are rapidly proliferating in an evolving marketplace and regulatory landscape. Social media data can provide timely insights into the use and marketing of e-cigarettes given the diversity of users and e-cigarette advertisers. As part of an ongoing multi-year study on e-cigarette information on Twitter, we have identified 4.5 million Tweets about e-cigarettes posted by 1.1 million unique Twitter accounts from Nov 2014 to August 2015. Nearly three-quarters of the unique Twitter accounts belong to individuals and only about 1% of the Twitter accounts belong to marketing, defer advertising and sell e-cigarettes. Marketers tweet more frequently than individuals, thus marketing tweets make up a disproportionate share of Tweet volume. In our initial qualitative assessment of e-cigarette related tweets we see different themes in Tweets from individuals and marketers, which both have unique regulatory and compliance implications. Tweets from individuals provide insights into use patterns of e-cigarettes that re-veal likely use of e-cigarettes by minors and in places where e-cigarette use may violate clean indoor air regulations or e-cigarette use bans (e.g., ‘These kids really smoking a vape pen in class yep it’s official. ‘Was this Bulls fan hitting a vape in the middle of a game?’). Tweets from marketers demonstrate the wide range of marketing activities occurring on Twitter, from price reducing strategies (e.g., ‘FREE E-Cigarette Starter Kit for Every Purchase of 5 E-Cigarette Refill Packs!’ Code FREEWITH5) to sponsored events (e.g., ‘A SEXY VIEW OF THE ECC 2014...'}
SYM5
EVALUATING ADVERSE EVENTS IN A GLOBAL SMOKING CESSATION STUDY (EAGLES): A RANDOMIZED, CONTROLLED TRIAL COMPARING THE SAFETY AND EFFICACY OF THE FIRST-LINE SMOKING CESSATION AIDS IN SMOKERS WITH AND WITHOUT PSYCHIATRIC DISORDERS

Judith Prochaska, PhD, MPH, Stanford University, Stanford, California, USA; Neal Benowitz, MD, University of California, San Francisco, California, USA; Robert West, PhD, University College, London, United Kingdom; Robert Anthenelli, MD, University of California, San Diego, California, USA

Up to two-thirds of smokers who try to quit do so without assistance due, in part, to concerns about the neuropsychiatric (NPS) safety risk of smoking cessation medications. Results from large observational cohort studies and meta-analyses of randomized controlled trials (RCTs) provide reassurance that the non-nicotine smoking cessation aids, varenicline and bupropion SR, are not associated with serious NPS adverse events (AEs). However, what has been lacking until now is a RCT that directly compares these agents with placebo and an active comparator (transdermal nicotine patch) and that systematically probes for NPS AEs while smokers are trying to quit. This symposium will describe the main findings from the 16-country, multicenter EAGLES trial—the largest trial of pharmacotherapy for smoking cessation conducted to date. It examined the safety and efficacy of varenicline, bupropion SR, and transdermal nicotine patch in a double blind, triple-dummy, placebo-controlled RCT in cohorts of smokers with (N=4074) and without (N=3984) psychiatric disorders. Dr. Prochaska will present the background for the EAGLES trial and will examine the strengths and limitations of FDA MedWatch and Adverse Events Reporting System data, and the associations between smoking and NPS AEs. Dr. Benowitz will present an overview of the EAGLES trial study design and will reveal the main safety results that are based on a composite endpoint and stringent NPS AE monitoring. Dr. West will then present the top-line efficacy results in the head-to-head comparisons among varenicline, bupropion SR, transdermal nicotine patch, and placebo. Dr. Anthenelli will examine the relationships between smoking and suicidal ideation/behavior in cohorts of participants with and without psychiatric disorders, and will discuss results obtained using the Columbia Suicide Severity Rating Scale that was administered throughout the EAGLES trial. Dr. Hughes will serve as the discussant for the symposium, synthesizing the results from the four presentations and placing them in the context of other studies assessing the safety and efficacy of these first-line smoking cessation medications. 

Justification: Results from this trial address concerns about the neuropsychiatric safety risk of non-nicotine smoking cessation medications which can negatively impact the results of these aids on increasing smoking cessation rates at the population level.

Funding: EAGLES was sponsored by Pfizer Inc. and GSK.

SYM5B
EAGLES TRIAL: STUDY DESIGN AND NEUropsychiatric SAFETY RESULTS

Neal Benowitz, MD*, A. Eden Evins*, Robert West*, Lisa St.Aubin*, Thomas McRae*, David Lawrence*, John Ascher5, Cristina Russ*, Alok Krishen*, Robert Anthenelli*, University of California, San Francisco, California, USA, Massachusetts General Hospital and Harvard Medical School, Boston, Massachusetts, USA, University College, London, United Kingdom, Pfizer Inc, New York, New York, USA, *GSK, Research Triangle Park, North Carolina, USA, PAREXEL International (Employee of PAREXEL on behalf of GSK), Research Triangle Park, North Carolina, USA, University of California, San Diego, California, USA

Neuropsychiatric (NPS) safety of first line smoking cessation medications was studied in a multicenter, international, randomized controlled clinical trial. Treatment groups included varenicline (1 mg twice daily), bupropion SR (150 mg twice daily), transdermal nicotine patch (21 mg with taper), and placebo, administered in a triple-dummy design. Medication was provided for 12 weeks and there was a 12 week non-treatment follow-up. Treatment-seeking smokers included two cohorts evaluated for safety: those with (N=4074) and those without (N=3984) a history of psychiatric disorders. In the psychiatric cohort, participants were diagnosed with primary affective disorders (70%), anxiety disorders (19%), psychotic disorders (9.5%), personality disorders (0.6%), and at least a third were stably taking psychotropic medications. Among participants in the non-psychiatric history cohort, 78.9% and 74.2%, respectively, completed the treatment, and 76.4% and 77.8%, respectively, completed the study. The primary safety endpoint was a composite of 16 NPS adverse events (AEs), including anxiety, depression, feeling abnormal, and hostility (all rated as severe), and agitation, aggression, delusions, hallucinations, homicidal ideation, mania, panic, paranoia, psychosis, suicidal ideation, suicidal behavior, and completed suicide (all rated as moderate or severe). The rate of NPS AEs was similar across the four treatment groups, with more AEs in the psychiatric cohort compared with the non-psychiatric cohort. Treatment discontinuations due to NPS AEs were similar across treatment groups. In the non-psychiatric cohort, the risk for the composite safety endpoint was significantly lower for varenicline-treated compared with placebo-treated patients (95% confidence intervals [CIs] for risk difference [RD] were below zero). In the psychiatric cohort, RDs between the active treatment groups and placebo were not significant (95% CIs included zero). The results of this study indicate that current first line smoking cessation medications compared with placebo do not significantly increase the risk of NPS AEs in smokers with or without psychiatric disorders.

Funding: EAGLES was sponsored by Pfizer Inc. and GSK.

SYM5A
NEUropsychiatric RISK CONCERNS IN THE CONTEXT OF SMOKING, QUITTING, AND CESSATION PHARMACOTHERAPY USE

Judith Prochaska, PhD, MPH*, Stanford University, Stanford, California, USA

Providing background, this presentation will cover the multiple ways in which neuropsychiatric serious adverse events (NPS-AEs) have been a concern associated with tobacco use and observed in the context of cessation treatment. First, cross-sectional and prospective studies have identified smoking as one of the strongest predictors of suicidal ideation and behavior with pooled multivariate relative risks exceeding 2.0. Second, depression recurrence among smokers with a history of depression is common (24%) as is psychiatric re-hospitalization among smokers with serious mental illness (47% to 56% in 12 to 18 months), and event rates are independent of quitting smoking. Thirdly, bupropion and varenicline, two of the three forms of FDA-approved cessation pharmacotherapy, have box warnings for potential NPS-AEs. The box warnings followed the FDA’s Adverse Event Reporting System review of suicidal-related events occurring between 2006-2007 for varenicline (n=153 events), bupropion (n=75), and nicotine patch (n=34). Varenicline had a higher proportion of cases for suicidal ideation (76% vs. bupropion (61%) or the patch (47%) and a lower proportion of suicide or other self-injurious behavior (24%) than bupropion (39%) or the patch (53%). Subsequently, results from large independent observational cohort studies and meta-analyses of randomized controlled trials found similar incidence of anxiety, depressed mood, and other mood disorders in patients treated with active compared to placebo drug, with NPS-AE rates <1% and relative risks below 1.00. Presenting research, general practice, and regulatory perspectives, Dr. Prochaska will summarize the findings regarding NPS-AEs associated with tobacco use and cessation treatment leading up to the EAGLES trial with consideration of data strengths and limitations. EAGLES was designed specifically to assess varenicline and bupropion as aids to smoking cessation treatment in subjects with and without an established diagnosis of psychiatric disorders and to characterize the NPS-AEs in both of these populations. Presentation of efficacy and safety findings from EAGLES will follow by colleagues as part of this symposium.

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RELATIVE EFFICACY OF VARENICLINE, BUPROPION SR, AND NICOTINE TRANSDERMAL PATCH IN AIDING SMOKING CESSATION IN THE EAGLES TRIAL

Robert West, PhD¹, Neal Benowitz², Robert West³, Lisa St Aubin⁴, Thomas M Crae⁵, David Lawrence⁶, John Ascher⁷, Cristina Russi⁸, Alok Krishen⁹, Robert Anthenelli¹⁰, ¹University College, London, United Kingdom, ²University of California, San Francisco, California, USA, ³Massachusetts General Hospital and Harvard Medical School, Boston, Massachusetts, USA, ⁴Pfizer Inc, New York, New York, USA, ⁵GSK, Research Triangle Park, North Carolina, USA, ⁶PAREXEL International (Employee of PAREXEL on behalf of GSK), Research Triangle Park, North Carolina, USA, ⁷University of California, San Diego, California, USA

Varenicline, bupropion SR, and transdermal nicotine patches all improve success rates of attempts to stop smoking. Network meta-analyses strongly suggest that bupropion SR and nicotine patches have similar efficacy, and that varenicline has greater efficacy than both of these. However, there are no large three-way trials making direct comparisons. Smokers with mental health problems are less likely to succeed in attempts to stop smoking than those without. There is very little evidence on how far presence of a psychiatric disorder moderates smoking cessation treatment effectiveness. The multi-national, triple-dummy, double-blind, placebo-controlled EAGLES trial, conducted in cohorts of smokers with and without a history of psychiatric disorders, aimed 1) to confirm the relative efficacy of varenicline, bupropion SR, nicotine patch, and placebo in aiding smoking cessation, and 2) to assess how far this effect is moderated by presence of psychiatric disorders. Samples sizes (intention to treat) were: psychiatric cohort—varenicline (N=1032); bupropion SR (N=1033); NRT patch (N=1025); placebo (N=1026); non-psychiatric cohort—varenicline (N=1033); bupropion SR (N=1001); NRT patch (N=1013); placebo (N=1009). Results are reported as odds ratios (with 95% confidence intervals) for continuous abstinence between weeks 9–24, confirmed by expired air carbon monoxide. Bupropion SR and nicotine patch increased abstinence rates to a similar degree compared with placebo: 1.89 (1.56–2.29) and 1.81 (1.49–2.19). Varenicline increased abstinence rates by 2.74 (2.28–3.30) compared with placebo, and by 1.45 (1.24–1.70) and 1.52 (1.29–1.78) compared with bupropion SR and nicotine patch. The psychiatric cohort had significantly lower abstinence rates than the non-psychiatric cohort. There was no evidence for an interaction between treatment and psychiatric status. Participants lost to follow up were considered to have relapsed. Bupropion SR and nicotine patch have similar efficacy in helping smokers while varenicline is more effective than both of these. Treatment efficacy expressed as a ratio compared with placebo does not appear to be affected by presence of psychiatric disorders.

Funding: EAGLES was sponsored by Pfizer Inc. and GSK.

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EMERGING EVIDENCE FROM THE TCORS: CIGAR USE PREVALENCE, CORRELATES, AND HEALTH EFFECTS

Arunava Ghosh, PhD, University of North Carolina; Jennifer Corchione, PhD, University of North Carolina; Melissa Harrell, PhD, MPH, University of Texas Health Science Center at Houston; Kymberie Sterling, DrPH, MPH, Georgia State University

Cigar use, which includes large cigars, little cigars and cigarillos, is a combustible form of tobacco use, and carries elevated health risks for tobacco-related diseases, including oral and esophageal cancers, even among those who report they do not inhale the smoke. Although cigarette use has declined, cigar use has increased among adults in recent years and is equally prevalent as cigarette use among youth. Cigar products are still available in several fruit and candy flavors, such as grape, blueberry, and vanilla – flavors that have been banned in cigarettes - which may be increasing their appeal among youth. Cigars are often used concurrently with cigarettes or other tobacco products (dual use), which may increase health and addiction risks to users, particularly if the dual use is sustained over a long period of time. Moreover, use of cigars may exacerbate health disparities, as more African American youth, both high school and middle school students, report cigar use than white youth. Researchers participating in this symposium are part of the FDA-funded, NIH Tobacco Centers of Regulatory Science and will present original research findings from their studies. Research presented will address correlates, perceptions about and motivations for cigar use, and health effects posed by cigar use and exposure. Dr. Arunava Ghosh will present the effects of little cigars on airway epithelia. Dr. Jennifer Corchione will present nationally-representative data on little cigar and cigarillo use and susceptibility among adolescents, young adults and adults. Dr. Melissa Harrell will present findings from survey research with Texas youth on the prevalence, perceptions and practices of cigar users, including flavored product use. Dr. Kymberie Sterling will present research on risk perceptions and intentions to use little cigars and cigarillos among adult dual users. Rachel Grana will chair the session and provide an overview of the TCORS and key cigar-related research questions. Cindy Tworek will participate as a discussant addressing the key public health issues and regulatory issues raised by the findings presented in the session.

Justification: The findings from this symposia focused on cigar research are relevant to FDA or other policy makers for informing regulations and policies. The findings may be of interest to researchers developing theory-based interventions to prevent cigar use or with cigar users, and to clinicians who intervene directly with cigar and other tobacco product users, particularly dual users.
**SYM6A**

**LITTLE CIGAR SMOKE CAUSES GREATER AIRWAY EPITHELIAL CYTOTOXICITY THAN CIGARETTE SMOKE**

Arunava Ghosh, PhD*, Andrew Garrison, MS, Amy Herring, ScD, Robert Tarran, PhD, University of North Carolina

The effects of little cigars (LC) on the lung has not been determined. We exposed primary human bronchial epithelial cultures (HBEC) grown at the air-liquid interface (ALI) to 3 LC brands (Swisher Sweets, Captain Black and Cheyenne) vs. Kentucky research cigarettes (KC). LC caused significantly greater airway dehiscence following both acute and chronic (5 day) exposure. LC smoke exposure also caused significantly greater cytotoxicity than KC, as evident by significantly increased propidium iodide uptake, LDH release and inflammation (IL-8 release). New tobacco products are entering the market and the addition of different flavors makes these products more appealing to younger generations. We therefore also tested 3 flavors of Swisher Sweets (Cedarwood, Mint and Peach and Strawberry) vs. KC on the immortalized CALU3 airway epithelial cell line grown on both 96 well plates and as ALI cultures. Irrespective of flavors, all LC elicited significantly increased cell death, decreased the percent of live cells and increased apoptotic/pro-apoptotic cell populations after a single exposure. Formations of autophagosomes were also evident after LC exposure. Repeated (4 days) of smoke exposure to ALI CALU3s caused significant cytotoxic effects as measured by increased LDH release and live cell-DAPI uptake. Repeated smoke exposure ALI CALU3s were also examined using an apoptotic protein array and we identified triggering of both intrinsic and extrinsic pathway activation by all the flavors tested. Increased levels of pro-apoptotic proteins (SMAC/Diablo and cytochrome c) and increased phosphorylation of p53 and Rad17 proteins were observed with decreased anti-apoptotic Bcl-2 and Bcl-X. Increased levels of "executioner" proteins pro-caspase-3 and cleaved caspase-3 were observed along with elevated expression of death receptors. Stress associated and three other heat shock proteins were increased. We conclude that LC exposure is significantly more toxic than KC exposure and that flavored LC are equally as harmful as KC.

Funding: Research reported in this abstract was supported by grant number P50 HL-120100 from the National Heart Lung and Blood Institute and the FDA Center for Tobacco Products (CTP). Research reported in this abstract was supported by grant number P50CA180907 from the National Cancer Institute and the FDA Center for Tobacco Products (CTP). Research reported in this abstract was supported by grant number 1 P50 CA180906-02 from the National Cancer Institute and the FDA Center for Tobacco Products (CTP). Research reported in this abstract was supported by grant number 1P50DA036128-01 (Pl. Eriksen, M) from the National Institute on Drug Abuse and the FDA Center for Tobacco Products (CTP). The content in the symposium is solely the responsibility of the authors and does not necessarily represent the official views of the NIH or the Food and Drug Administration.

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**SYM6B**

**LITTLE CIGAR/CIGARILLO USE AND SUSCEPTIBILITY AMONG ADOLESCENTS, YOUNG ADULTS, AND ADULTS**

Jennifer Comacchio, PhD*,1 Beth Rebouissin, PhD2, Amanda Richardson, PhD2, Kimberly Wiseman, MS3, Erin Suffin, PhD3,1, Wake Forest School of Medicine, 2University of North Carolina-Chapel Hill

As cigarette smoking rates have declined, the sale and use of little cigars/cigarillos (LCCs) have increased, particularly among adolescents and young adults. To decrease rates of LCC use, it is important to understand not only who currently uses LCCs, but also who is at-risk for use. Two nationally-representative phone surveys, adults (N=5014) and adolescents (N=1125), were conducted, which over-sampled smokers and individuals living in poverty. Participants were classified as lifetime users, current users, and susceptible nonusers of LCCs. Weighted estimates of LCC use for adults were 41.4% for lifetime use, 7.4% for current use, and 25% for susceptibility to use. Rates of use were highest among young adults (18-25), with 44.9% reporting lifetime use and 11.6% reporting current use. Weighted estimates of LCC use for adolescents were 6.6% for lifetime use, 1.9% for current use, and 16.6% for susceptibility to use. In addition to reporting on LCC use and susceptibility prevalence, we will also discuss predictors of use and susceptibility among adolescents, young adults, and adults. We will conclude with a discussion of the public health and regulatory implications of the results.

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**SYM6C**

**ADVANCING YOUTH CIGAR USE EPIDEMIOLOGY WITH IMPLICATIONS FOR FDA DEEMING AND MANUFACTURING REGULATIONS**

Melissa Harrell, PhD, MPH*,1 Joanne Delk, MS1, Christian Jackson, MS1, Alexandra Loukas, PhD1, Adriana Perez, PhD1, Cheryl Perry, PhD1, Cristine Delneo, PhD2,1University of Texas Health Science Center at Houston, 1University of Texas at Austin, 2Rutgers, The State University of New Jersey

PURPOSE: This study examined the prevalence, perceptions, and practices of cigar product use among a large, population-based sample of Texas youth (12-18 years old), focusing on (a) the use of flavored cigar products, especially at first use (b) perceived similarities between little cigar use and cigarette smoking; and (c) the practice of "blunting" (replacing tobacco in a large cigar or cigarillo with marijuana).

METHODS: Participants included n=4,188 middle school and high school students who completed the baseline survey of a longitudinal surveillance study (55.4% female; 32.0% non-Hispanic White, 17.0% non-Hispanic Black, 36.1% Hispanic, and 14.8% Other) in 80 schools in the four largest cities in Texas (Houston, Dallas-Ft. Worth, San Antonio, Austin). The survey was administered on portable tablets in classrooms and included pictures of tobacco products to help facilitate their recognition. RESULTS: Use of large cigars or cigarillos filled with marijuana was most prevalent (7.9% ever use), followed by the use of large cigars or cigarillos filled with tobacco (3.5% ever, 1.1% current use), and little filtered cigars (2.9% ever, 0.7% current use). Ever use of all cigar products was most common among males, older students, Hispanics, and those of low SES (p<0.05 for both types of cigar products). When asked, “Does smoking little filtered cigars feel like smoking cigarettes?,” half (56.5%) of those who currently smoked little filtered cigars answered as “yes.” CONCLUSION: Among youth, cigar products may not be used as intended by the manufacturer. “Blunting” was the most common form of cigar product use among these students, and many youth who smoke little filtered cigars perceived that they were smoking cigarettes. Findings that flavored cigar products are used more frequently than non-flavored ones at first use, and with regular use, are troubling, especially in this vulnerable population. These discoveries should help the FDA as it continues to make decisions about the deeming of cigar products, including little filtered cigars, and constituents that are allowed during manufacturing.

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SYM6D
RISK PERCEPTIONS OF AND INTENTIONS TO CONTINUE LITTLE CIGAR AND CIGARILLO SMOKING AMONG A NATIONALLY-REPRESENTATIVE SAMPLE OF ADULT DUAL SMOKERS
Kymberle Sterling, DrPH, MPH*, Ben Majeed, PhD, MPH, Georgia State University

There is growing concern that little cigars and cigarillos (LCCs) may contribute to smoking maintenance among cigarette smokers. Perceptions of risk are correlates of smoking behavior. However, few have examined the perceptions of risk of LCC smoking among cigarette smokers. Understanding cigarette smokers’ perceptions of LCC smoking is needed to inform future regulatory actions. We sought to profile current cigarette smokers’ LCC smoking behavior (experimentation and susceptibility) and their perceptions of risk about LCCs. Data were obtained from the 2014 Tobacco Products and Risk Perceptions Survey of a probability sample of 5717 US adults. For the current study, data were analyzed for a subsample of 591 dual current cigarette + ever LCC smokers. Dual smokers perceived that individuals could become addicted to LCCs (p<.001); that LCCs were less harmful than cigarettes (p<.001); and that daily LCC smoking is ‘very risky’ (p<.001) while occasional LCC smoking is only ‘somewhat risky’ (p=.01). Over half (57.3%) did not consider the health effects of LCC use at initiation and 54.7% had not heard about health risks associated with LCCs. Of the dual smokers, 88.0% said they were not addicted to LCCs and 20.4% intended to continue smoking LCCs in the future. Dual smokers with LCCs addictive were less likely (OR=0.14, CI=0.04, .52, p<.01) to intend to continue smoking LCCs. Compared to those who considered daily LCC smoking as ‘very risky’, those who considered it only ‘somewhat risky’ had higher odds of intending to continue smoking LCCs (OR = 2.2, CI=1.2, 3.9, p<.01). Perceptions about addiction and harm posed by the various LCC smoking patterns predict future LCC smoking.

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SYM7A
TRENDS IN TOBACCO USE AMONG U.S. ADULTS WITH CHRONIC CONDITIONS: NSDUH 2005-2013
Cassandra Stanton, PhD1,2, Diana Keith, PhD1,2, Jan Bunn, PhD2, Diann Gaalema, PhD2, Ryan Redner, PhD1, Allison Kurti, PhD2, Megan Roberts, PhD2, Nathan Doogan, PhD2, Stephen Higgins, PhD2,1 Westat,1 University of Vermont,2 Ohio State University

INTRODUCTION: People with mental health or medical co-morbidities have been identified by the CTP as a research priority due to high tobacco use and greater potential harm from use. This study examines whether declines in tobacco use in the general population have been realized among US adults with chronic illnesses. METHODS: Data were drawn from 9 years (2005-2013) of the National Survey on Drug Use and Health (N=335,080 ± 18 years). Measures included current cigarette smoking (past 30 day & lifetime ≥100 cigarettes) and smokeless use (past 30 day chew or snuff). Chronic conditions endorsed in past 12 months included hypertension, coronary heart disease, stroke, asthma, cancer, diabetes, depression, anxiety, hepatitis, HIV, and substance use disorder. Trends in product use for each condition and a composite of any condition were compared to respondents with no condition in weighted regression analyses assessing interactions with time and controlling for age, race, gender, and education. RESULTS: Adults with a chronic condition were more likely to smoke than those without a condition (p<0.00). Smoking prevalence declined among those with no condition (p=0.33), increasing the disparity in smoking between the two groups over time. Compared to the decrease noted among those without a condition, rates of smoking remained stable among those with asthma, diabetes, heart disease, and hypertension. Smoking decreased among those with anxiety, depression, and substance use disorders, but was higher compared to those without a condition at each time point. Smokeless use was more common among those with a chronic condition but increased in both populations over time (p=0.03). DISCUSSION: While cigarette smoking is decreasing in the US overall, adults with chronic conditions are continuing to smoke at similar or increasing rates over time. Use of smokeless products that are less regulated than cigarettes is increasing for all groups with higher rates among those with chronic conditions. Results have product regulatory implications and call for greater tobacco screening and cessation advice from providers.

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SYM7B
INTERSECTIONS AMONG RISK FACTORS FOR CIGARETTE SMOKING IN A U.S. NATIONALLY REPRESENTATIVE SAMPLE
Stephen Higgins, PhD1, Diana Keith, PhD1, Ryan Redner, PhD1, Thomas White, PhD1,2, Diana Gaalema, PhD1, Megan Roberts, PhD2, Nathan Doogan, PhD2, Cassandra Stanton, PhD2, University of Vermont,1 Ohio State University,2 Westat

INTRODUCTION: Since the mid 1960’s, there has been a striking decrease in the prevalence of cigarette smoking. However, this decrease has not been observed in some subpopulations (e.g., those with other substance use disorders). While research has revealed some well-established vulnerabilities to cigarette smoking, there has been relatively little research characterizing the intersection of these risk factors. This is an important gap considering that these vulnerabilities necessarily

Justification: The research shared in this symposium is from the FDA’s TCORS Working Group on Tobacco Use in Vulnerable Populations and has direct implications to protecting the public health of some of our most vulnerable populations through effective, evidence-based regulation of tobacco and nicotine delivery products.

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SYM7C
E-CIGARETTE USE AND QUIT SMOKING INTENTIONS IN VULNERABLE POPULATIONS
Pratibha Nayak, PhD*, Terry Pechacek, PhD, Georgia State University
INTRODUCTION: Electronic nicotine delivery systems (ENDS) are increasingly popular among cigarette smokers; however, there are little data on whether the use of ENDS assists or delays cessation from cigarettes, especially among vulnerable populations. We examined the predictors of intention to quit smoking and patterns of dual use of ENDS and traditional cigarettes among vulnerable populations.
METHODS: We analyzed data from a nationally representative, cross-sectional survey of 5,717 US adults to assess intentions to quit relating to cigarette use. The analytic sample consisted of 1,349 current cigarette smokers, of which 1,012 compared with HS or less education, dual users with BA/BS or higher degree (p<0.05) were using only one of 248 were dual cigarette smokers, i.e., using ENDS in past 30 days in addition to smoking traditional cigarettes. Weighted logistic regression analyses were conducted to test whether dual use, gender, age, income, education, ethnicity, perceived health status, and demographic by dual use interactions predicted self-reported intention to quit. RESULTS: Dual users overall were better educated (p<0.05), more likely to have higher intention to quit smoking, OR=1.79 (95%CI=1.27-2.53), and more likely to have made a quit attempt in the past year, OR=1.70 (95%CI=1.20-2.39) than cigarette users only. Among these dual users, Blacks reported higher intention to quit than Whites (OR=1.8, 95%CI=1.22-2.68). Compared with HS or less education, dual users with BA/BS or higher degree (OR=2.42, 95% CI=1.58-3.72) and some college (OR=1.5, 95% CI=1.12-2.01) had higher intention to quit. In multivariate analyses, intention to quit did not vary significantly by income, age, or perceived health status, and interactions between dual use and demographics were non-significant. CONCLUSIONS: Whether dual use with higher intentions to quit will increase population quit rates remains uncertain. If using ENDS could contribute to increased cessation of cigarettes among the better educated and Blacks, the disparities of smoking by race could be decreased but may still exist among less educated.
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SYM7D
A SYSTEMATIC REVIEW OF TOBACCO INDUSTRY MARKETING AND TOBACCO CONTROL COMMUNICATIONS TO VULNERABLE POPULATIONS
M. Justin Byron, PhD*1, Lourdes Baezconde-Garbanati, PhD2, Tessa Boley Cruz, PhD3, Robert Garcia, MPH4, L-ting Huang, PhD5, Helen Meissner, PhD6, Mary Ann Pentz, PhD7, Mary Ann Pentz, PhD7, Shyanika Rose, PhD7, Jennifer Unger, PhD8, 1University of North Carolina, 2University of Southern California, 3National Institutes of Health, 4Schoor Institute for Tobacco Research
INTRODUCTION: The tobacco industry has a history of targeting marketing campaigns to minority groups and other vulnerable populations, potentially increasing tobacco use among these populations. In response, some tobacco control marketing campaigns have also focused on vulnerable populations. We conducted a systematic review of tobacco industry and tobacco control marketing to vulnerable populations in the US to inform regulatory efforts to reduce tobacco use disparities. METHODS: We reviewed articles about tobacco industry and tobacco control marketing directed at vulnerable populations including racial/ethnic groups, women, youth, sexual minorities, low-education and low SES, geographic minorities, military/veterans, and people with mental health disabilities. We included English-language peer-reviewed articles published 2004 thru 2015 in PubMed and 6 other databases. We excluded articles that focused on non-US populations, were not original research studies, and those where vulnerable populations were only a minor correlate. RESULTS: We identified 4,821 unique articles and then conducted dual-coder title, abstract, and full-text reviews. Preliminary analyses suggest that there is substantial evidence of tobacco industry targeting of various populations. We are also uncovering best practices for tobacco control marketing to vulnerable populations. The populations most often addressed were adolescents and young adults. Gaps exist for sexual minorities, populations with mental health disabilities, some racial/ethnic minority populations, and groups with multiple vulnerabilities. Results of our search and directions for future research will be discussed. CONCLUSIONS: Policymakers, regulators, and the tobacco control community need to remain vigilant in limiting tobacco industry marketing to vulnerable populations to reduce tobacco use disparities. Future tobacco control marketing campaigns can apply best practices found in this literature and consider populations that are targeted by the tobacco industry but missed by tobacco control campaigns. This review can help tobacco control marketing efforts effectively reach vulnerable populations with the greatest need.
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SYM8
E-CIGARETTE FLAVORING IN NICOTINE CONSUMPTION AND REWARD
Gideon St.Helen, PhD, Division of Clinical Pharmacology, Department of Medicine, University of California, San Francisco, CA; Janet Audrain-McGovern, PhD, Department of Psychiatry, Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA; Paul Harrell, PhD, Eastern Virginia Medical School, Norfolk, VA; Mariella De Biasi, PhD, Department of Psychiatry, Perelman School of Medicine, University of Pennsylvania School of Medicine, Philadelphia, PA
Electronic cigarettes (e-cigarettes, e-cigs) are aggressively marketed, widely available and increasingly popular. While an e-cig delivers lower levels of toxicants than a traditional, combusted cigarette, both deliver nicotine, potentially fostering cross-product or dual use through dependence on nicotine. Availability of, and preference for flavors is an important motivation for e-cig use. Appealing flavors provide the opportunity for repeated nicotine exposure and ultimately the development and persistence of nicotine dependence. This symposium brings together scientists at different stages of their career to present translational research aimed at determining how e-cigarette flavoring promotes and maintains e-cigarette use. Dr. St. Helen, from UCSF will report on the impact of flavors on nicotine consumption and the addictive potential of e-cigarette. Dr. Audrain-McGovern from the University of Pennsylvania will present findings on the rewarding and the reinforcing effects of e-cigarette flavoring and their role in vaping behavior. Dr. Harrell from Eastern Virginia Medical School will discuss how flavors in e-cigarettes may impact the ability to quit. Finally, Dr. De Biasi, from the University of Pennsylvania will report on how e-cigarette flavoring affects reward-related behavior in adolescent mice.

SYM8E-CIGARETTE FLAVORING IN NICOTINE CONSUMPTION AND REWARD
Gideon St.Helen, PhD, Division of Clinical Pharmacology, Department of Medicine, University of California, San Francisco, CA; Janet Audrain-McGovern, PhD, Department of Psychiatry, Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA; Paul Harrell, PhD, Eastern Virginia Medical School, Norfolk, VA; Mariella De Biasi, PhD, Department of Psychiatry, Perelman School of Medicine, University of Pennsylvania School of Medicine, Philadelphia, PA
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SYM8A
IMPACT OF FLAVORS ON NICOTINE INTAKE, RETENTION, AND EFFECTS AMONG ELECTRONIC CIGARETTE USERS

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Over 700 unique flavors of electronic cigarette (E-cig) refill liquids (e-liquids) are on the market but little is known of their impact on E-cig pharmacology and addictiveness. The objective of this study was to assess the impact of flavors on the clinical pharmacology of E-cigs. To date, data from 4 subjects have been analyzed; additional subjects will be included in the final presentation. The study was a 3-day inpatient study in which healthy experienced users used E-cigs in two sessions each day: a standardized session of 15 puffs, followed by 4 hours of abstinence, then a 90 minute ad lib session. Subjects crossed-over between tobacco and strawberry flavored e-liquids (both 18 mg/mL nicotine, 50/50 vegetable glycerin/propylene glycol), and their usual flavor e-liquid, one flavor per study day. All subjects used a KangerTech mini ProTank 3 with 3.7 volt batteries. During the standardized session, exhaled nicotine after each puff was collected and blood samples were taken before and several times after the last puff. During the ad lib session, blood samples were taken every 15 minutes. Plasma nicotine was analyzed by GC-MS/MS and nicotine in e-liquids and nicotine exhaled into gas traps was analyzed by LC-MS/MS. On average, subjects vaped 125±29 mg (mean ±SD) of the strawberry e-liquid, 103±26 mg of the tobacco e-liquid, and 167±57 of their usual e-liquid during the standardized session. During the ad lib session, they vaped, on average, 359±152 mg of strawberry e-liquid, 161±109 mg of tobacco e-liquid, and 431±317 mg of their usual e-liquid. Average changes in subjective ratings for the ad lib session are presented for strawberry (S), tobacco (T), and usual (U) flavors: craving: -1.4 (S), -1.9 (T), -2.6 (U); withdrawal, -5.0 (S), -6.0 (T), -7.3 (U); negative affect, -1.3 (S), -0.3 (T), -1.3 (U); and, positive affect, 1.0 (S), 3.0 (T), 3.8 (U). Average subjective ratings of satisfaction were 13.5 (S), 15.0 (T), and 17.8 (U). Differences in nicotine intake, retention, and pharmacokinetic parameters by flavor will also be presented. Flavors may impact the amount of e-liquid used, nicotine intake and pharmacology, and e-cigarette addictiveness.

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SYM8B
THE IMPACT OF FLAVORING ON THE REWARDING AND REINFORCING VALUE OF E-CIGARETTES

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E-cigarette (e-cig) use has risen rapidly, especially among young adults. Of those young people who have used e-cigs, most have used a flavored e-cig. Young adults report that the availability of flavoring is an important reason for e-cig use. While flavoring may reduce perceptions of e-cig addictiveness, flavoring may actually increase the addictive liability of e-cigs with nicotine by increasing their rewarding and reinforcing value. We sought to determine whether flavoring enhances the subjective rewarding value, relative reinforcing value, and absolute reinforcing value of an e-cig with nicotine compared to an unflavored e-cig with nicotine.

Young adult smokers who tried but did not use e-cigs regularly (n=17) underwent 3 laboratory sessions. Session 1 evaluated the rewarding value of flavoring by having participants sample and rate an unflavored, fruit flavored and dessert flavored e-cigs with nicotine. Session 2 assessed the relative reinforcing value of a flavored vs unflavored e-cig via a choice task. Session 3 assessed the absolute reinforcing value of flavored vs unflavored e-cigs via a 90-minute ad-libium vaping session where puffs from an unflavored and flavored e-cig were measured. Results showed greater reward value (p = .02) from fruit and dessert flavored e-cigs vs the unflavored e-cig (8.5, 6.9, and 5.2, respectively). Participants worked harder to earn puffs from a flavored vs the unflavored e-cig (615 vs 124 mouse clicks; t(16) = 3.26, p=.003). Participants also took more puffs from a flavored vs unflavored e-cig in the ad-lib vaping session (34 vs 19; t(14) = 1.75, p=.05). Higher reward value was associated with a greater reinforcing value of flavored relative to unflavored e-cig (r = .56, p = .02), which was associated with greater consumption of a flavored vs the unflavored e-cig (r = .58, p=.02). Substances that are reinforcing tend to have an escalating pattern of use. Greater consumption of flavored e-cigs will result in greater nicotine exposure, which will foster nicotine dependence.

Funding: This study was supported by NIH/NCI/NCDA P50-CA-179546.

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SYM8C
USE OF E-CIGARETTE FLAVORS AMONG ADULT CIGARETTE SMOKERS: ASSOCIATIONS WITH SMOKING CESSATION

Paul Harrell, PhD1, Vani N. Simmons Vani N. Simmons, PhD1,2, John Correa3, Nicole Menzie1, Lauren Metzler2, Marina Unrod, PhD2,3, Thomas Brandon, PhD2,3, 1Department of Pediatrics, Eastern Virginia Medical School, Norfolk, VA, USA, 2Department of Health Outcomes and Behavior, Moffitt Cancer Center, Tampa, FL, USA, 3Department of Psychology, University of South Florida, Tampa, FL, USA

Electronic nicotine delivery systems ("e-cigarettes") have potential to reduce harm associated with cigarette smoking. Unlike other tobacco products in the United States, flavors are currently legal in e-cigarettes. The current study examined associations between e-cigarette flavors and smoking status among 1815 adults with a history of cigarette smoking. The vast majority (98.6%) used flavorings for their e-cigarettes. Some of the most popular flavors involved fruit (e.g., strawberry, cherry, 41.3%), tobacco (17.2%), menthol (11.3%), beverages (e.g., tea, coffee, soda, beer, liquor, 6.7%), vanilla (3.4%), bakery/dessert (e.g., custards, cakes, 3.4%), RY4 (a blend of food/tobacco flavors, 0.8%), and butter (a flavoring of concern due to presence of diacetyl, a recognized risk factor for lung disease, 0.4%). Some specifically noted they did not use tobacco flavors due to desires to limit connections to cigarettes. Indeed, compared to fruit flavoring users, tobacco flavor users were significantly more likely to continue to smoke. Interestingly, those who used beverage flavorings were also more likely to smoke, perhaps due to pre-existing associations between beverage flavors (e.g., coffee, alcohol) and cigarette smoking. These increased levels of risk continued to be significant (p ≤ .001) after controlling for other significant risk factors for continued smoking. The presented results will underscore the importance of examining the role of flavors in quitting cigarette smoking complex association between e-cigarette flavoring and risk behavior, suggesting that flavoring may play a role in reducing combustible tobacco use.
Funding: This work has been supported in part by the Survey Methods Core Facility at the H. Lee Moffitt Cancer Center & Research Institute, a NCI-designated Comprehensive Cancer Center (P30-CA78292), as well as by grants R01CA134367 and R61CA154596, awarded to Thomas Brandon and Vani Simmons, respectively.

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SYM8D
INFLUENCE OF FLAVOR ADDITIVES ON E-CIGARETTE CONSUMPTION DURING ADOLESCENCE: DEVELOPMENT AND VALIDATION OF A MOUSE MODEL

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Adolescent e-cigarette (e-cig) use is a rapidly growing public-health issue. An NIH survey from December of 2014 found that 17.1% of 12th graders and 16.2% of 10th graders reported e-cig use in the month prior to the survey completion. Additional evidence suggests that a large portion of these adolescents have had no prior exposure to tobacco and are using e-cigs as a route to experimentation and risky behavior. In fact, children have been found to be three times more likely to try e-cigs than smoking tobacco. Not only do e-cigs expose adolescents to nicotine, but they also expose users to a relatively novel combination of flavors and nicotine. This study set out to develop an animal model of e-cig smoke exposure in mice and to determine how the flavor additives of e-cigs affect nicotine reward in adolescents. Using a smoking machine in conjunction with commercially available e-cig devices, we have established a delivery method for nicotine vapor which results in nicotine vapor exposure similar to that of smoking. Using a conditioned place preference (CPP) paradigm, we compared the rewarding properties of nicotine vapor in adolescent mice to CPP achieved by traditional nicotine injections. Following a pretest, adolescent (PN24) mice were conditioned for 8 days to nicotine vapor or injections and preference was measured during the post-test. We found a significant increase in the % of time spent in the nicotine vapor paired compartment that was similar to that produced by nicotine injections. The possibility that a fruit-based flavor additive enhances the rewarding properties of nicotine vapor in adolescent mice was also examined in separate behavioral experiments. We have established and validated a model to test e-cig exposure in mice that is as effective as the standard nicotine CPP model. Additionally, our data suggest that nicotine vapor is rewarding independently of flavor, and that flavor additives might enhance nicotine reward. Looking at the future, this mouse model will allow us to uncover the relationship among flavoring, e-cig use, and the risk for addiction in adolescents.

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SYM9A
GENETICS, EPIGENETICS, BIOMARKERS, AND THE PROMISE OF PERSONALIZE SMOKING CESSATION TREATMENT

Nancy Saccone, PhD1, Andrew Bergen, PhD, Li-Shiun Chen, MD, MPH, ScD1, Sean David, MD PhD1, Hannah Elliott, PhD MRes, Marilyn Foreman, MD MS3, Jaakko Kaprio, MD PhD3, Thomas Plasskei, PhD2, Caroline Reiton, PhDr, Jen Ware, PhD3, Laurie Zawertailo, PhD3, Washington University School of Medicine, 3BioReaIm, SRI International, 4Morehouse School of Medicine, 5University of Helsinki, 6University of Missouri, 7University of Toronto

Genetic research has succeeded in definitively identifying genetic variants associated with nicotine dependence and heavy smoking. To attain the goal of reducing the prevalence of smoking and its consequent health harms, the next frontier is to identify genetic predictors of successful smoking cessation and also the efficacy of particular smoking cessation treatments (‘pharmacogenomics’). More broadly, additional ‘omic’ and biomarker approaches also hold promise to aid the personalization of treatment. To motivate ongoing and future efforts, several compelling, emerging genetic and biomarker findings related to smoking cessation and treatment will be reviewed and reported. These include genetic variants in the nicotinic receptor subunit gene CHRNA5, variants in the nicotine metabolism gene CYP2A6, and the nicotine metabolite ratio. The results to date demonstrate the value and utility of data generated from biosamples in clinical treatment trial settings. This presentation will cross-reference a parallel presentation outlining a framework and guidelines for the consistent integration of biosample collection and generation of genetic, genomic, and biomarker data into smoking cessation pharmacotherapy trials. Together these presentations address a call for motivation and guidance in integrating the fields of genetics and treatment within the tobacco research community. Ultimately, by encouraging and facilitating the incorporation of biosample collection and genotyping in treatment trials, we seek to accelerate progress towards making effective, personalized smoking cessation treatments a reality for smokers seeking to quit.

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SYM9
INCORPORATING GENOMIC DATA INTO TREATMENT RESEARCH: CONSENSUS APPROACHES, GENOME-WIDE ANALYSES, AND PROSPECTS FOR TRANSLATION

Nancy L Saccone, PhD, Washington University; Li-Shiun Chen, MD, MPH, ScD, Washington University; Anu Loukola, PhD, University of Helsinki; James W Baurley, PhD, BioRealm

The efficacies of FDA-approved smoking cessation pharmacotherapies are known, but subgroups defined by clinical and genetic factors have different responses to therapy. For example, nicotine dependence measures, CHRNA5 variants, CY- P2A6 variation associated with CYP2A6 metabolic activity, and direct measures of nicotine metabolism such as the nicotine metabolite ratio (NMR), are associated with prospective abstinence in randomized clinical trials. Heritability estimates for nicotine dependence, nicotine metabolism, and smoking cessation phenotypes have had no prior exposure to tobacco and are using e-cigs as a route to experimentation and risky behavior. In fact, children have been found to be three times more likely to try e-cigs than smoking tobacco. Not only do e-cigs expose adolescents to nicotine, but they also expose users to a relatively novel combination of flavors and nicotine. This study set out to develop an animal model of e-cig smoke exposure in mice and to determine how the flavor additives of e-cigs affect nicotine reward in adolescents. Using a smoking machine in conjunction with commercially available e-cig devices, we have established a delivery method for nicotine vapor which results in nicotine vapor exposure similar to that of smoking. Using a conditioned place preference (CPP) paradigm, we compared the rewarding properties of nicotine vapor in adolescent mice to CPP achieved by traditional nicotine injections. Following a pretest, adolescent (PN24) mice were conditioned for 8 days to nicotine vapor or injections and preference was measured during the post-test. We found a significant increase in the % of time spent in the nicotine vapor paired compartment that was similar to that produced by nicotine injections. The possibility that a fruit-based flavor additive enhances the rewarding properties of nicotine vapor in adolescent mice was also examined in separate behavioral experiments. We have established and validated a model to test e-cig exposure in mice that is as effective as the standard nicotine CPP model. Additionally, our data suggest that nicotine vapor is rewarding independently of flavor, and that flavor additives might enhance nicotine reward. Looking at the future, this mouse model will allow us to uncover the relationship among flavoring, e-cig use, and the risk for addiction in adolescents.

Funding: Research presented in this abstract was funded in part by TCTRS NIH/NCI/FDA P50-CA179546 and K12GM081295

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Dr Bergen will introduce the themes of the symposium, the presenters and the discussant. Dr Saccone will review the current status of genetic studies of smoking cessation and the potential benefits of incorporating various -omic data into clinical trials. Dr Chen will present the latest consensus approaches to incorporating biospecimen analyses in randomized clinical trials, including human subjects and phenotyping issues, and present an update on an ongoing genotype-stratified clinical trial of smoking cessation. Dr Loukola will present results from the first GWAS of the NMR in smokers and integrated methylation quantitative locus analysis which has defined hundreds of genome wide significant SNPs, explains a large fraction of the variance, and where genetic risk score is associated with consumption. Dr Baurley will present the design characteristics of a genome-wide genotyping array for the study of addictive disorders, and will provide results from the first GWAS of the NMR derived from laboratory studies of nicotine metabolism including results from three different ancestries. Dr. David will lead the discussion, reflecting upon past genetic studies and helping interpret recent genomic findings and their potential translation to practice.

Justification: This presentation will present consensus approaches on incorporating genomics into treatment research and will present genome-wide research results relevant to incorporating genomics into treatment research.

Funding: Dr Bergen reports no current funding.

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2016 Symposia
SYM9B
LEVERAGING BIOLOGICAL SAMPLES IN SMOKING CESSATION TRAILS: WHY AND HOW
Li-Shiun Chen, MD MPH DSc*, Laurie Zawertailo, PhD², Andrew Bergen, PhD¹, Sean David, MD DPhil¹, Marilyn Foreman, MD MS¹, Jaakko Kaprio, MD PhD¹, Thomas Piaiesecki, MD¹, Nancy Saccone, PhD², Jen Ware, PhD¹, Washington University School of Medicine, ¹University of Toronto, ²BioReaml, SRI International, ³Stanford University School of Medicine, ⁴University of Helsinki, ⁵University of Missouri, ⁶University of Bristol

In the new era of ‘Precision Medicine’, and pharmacogenomics more specifically, the need to integrate the collection of genomic data within clinical trials is becoming increasingly important. The identification of genomic loci that affect response to smoking cessation pharmacotherapies, or susceptibility to adverse reactions to such drugs, holds real promise to improve smoking cessation treatment efficacy through genetically tailored treatment interventions. A clear challenge in identifying such variants however will be that of obtaining adequate sample sizes. Consortium-based approaches will likely be necessary to yield real successes, as we have seen from previous genome-wide association studies of complex traits including smoking behavior. Thus for pharmacogenomic studies, meta-analysis of data from individual smoking cessation trials will be crucial and will ideally require comparable trial designs and outcomes. We propose to outline a framework for the consistent integration of genetic/genomics methods into smoking cessation pharmacotherapy trials, precision assessment of relevant outcome measures and improved phenotypic characterisation (including experience of side effects), and the analysis and reporting of data generated. This work aligns clearly with the objectives of the recently unveiled Precision Medicine Initiative, and addresses a call for practical advice in integrating the fields of treatment and genetics within the nicotine and tobacco research community. This presentation will cross-reference a parallel presentation that uses concrete examples to illustrate the value and importance of collecting biological samples in clinical trials. The overarching purpose is to encourage treatment researchers to consider biosample collection and genotyping their existing samples, as well as integrating genetic analyses into their study design. A variety of areas will be discussed, including: 1) Biological sample collection requirements, storage, and analysis (including associated costs) and genetics consortia, 2) Collection of appropriate participant consent and NIH sharing requirements, 3) Guidance on phrasing to include in Institutional Review Board (IRB) / Research Ethics Committee (REC) applications, 4) Information on phenotype assessment and characterization, and 5) Genetically informed trial design.

Funding: Li-Shiun Chen is supported by DA030398 (LSC), and R01 DA038076 (LSC) from the National Institute on Drug Abuse. JK has consulted for Pfizer on nicotine dependence in 2012-2014. JK is supported by the Academy of Finland (grants # 265240 & 263278).

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SYM9C
A GENOME-WIDE ASSOCIATION STUDY OF A BIOMARKER OF NICOTINE METABOLISM
Anu Loukola, PhD¹, Jadhiga Buchwald, MSc², Richa Gupta, MSc², Tellervo Korhonen, PhD¹, Samuli Ripatti, PhD¹, Olli Raitakari, MD PhD¹, Veikko Salomaa, MD PhD¹, Richard Rose, PhD¹, Rachel Tyndale, PhD¹, Jaakko Kaprio, MD PhD¹, University of Helsinki, ¹Helsinki Institute of Health, ²University of Cincinnati, ³University of Toronto

Individuals with fast nicotine metabolism typically smoke more and thus have a greater risk for smoking-induced diseases. Further, the efficacy of smoking cessation pharmacotherapy is dependent on the rate of nicotine metabolism. Our objective was to use nicotine metabolite ratio (NMR), an established biomarker of nicotine metabolism rate, in a genome-wide association study (GWAS) to identify novel genetic variants influencing nicotine metabolism. A heritability estimate of 0.81 was obtained for NMR using 135 twin pairs. We performed a GWAS in cotinine-verified current smokers of three Finnish cohorts (FinnTwin, Young Finns Study, and FINRISK2007), followed by a meta-analysis of 1518 subjects, and annotated the genome-wide significant SNPs with methyltion quantitative loci (meQTL) analyses. We detected association on 19q13 with 719 SNPs exceeding genome-wide significance within a 4.2 Mb region. The strongest evidence for association emerged for CYP2A6 (p=5.7E-86), the gene encoding the main metabolic enzyme for nicotine. Other interesting genes with genome-wide significant signals included CYP2B6, CYP2A7, EGLN2, and NUMBL. Conditional analyses revealed three independent signals, all located within or in the immediate vicinity of CYP2A6. The independent SNPs explained a strikingly large fraction of variance (31%) in NMR; they likely tag multiple functional variants, both known and unidentified ones, and thus capture information on relevant haplotypes. A genetic risk score constructed using the independent SNPs showed association with smoking quantity (p=0.0019) in two independent Finnish samples. Further, we provide evidence for plausible epigenetic mechanisms influencing NMR. Our meQTL results showed that methylation values of CpG sites within the 19q13 locus are affected by genotypes, and according to causal inference test, for some of the SNPs the effect on NMR is mediated through methylation. We will next target rare variants as well as perform epigenome-wide association analyses. Our aim is to dissect both genetic and epigenetic factors influencing nicotine metabolism, and thus enable development of more effective personalized cessation pharmacotherapies.

Funding: Phenotyping and genotyping of the Finnish twin cohorts has been supported by the Academy of Finland Center of Excellence in Complex Disease Genetics (grants 213506, 129860), the Academy of Finland (grants 100499, 205856, 118555, 141054, 265240, 263278 and 264146 to JK), National Institute of Alcohol Abuse and Alcoholism (grants AA-12502, AA-00145, and AA-092023 to RJR, and AA15416 and K22AA018755 to Danielle M. Dick), Sigrid Juselius Foundation (to JK), Global Research Award for Nicotine Dependence, Pfizer Inc. (to JK), the Welcome Trust Sanger Institute, UK, and the Broad Institute, US. The Young Finns Study has been financially supported by the Academy of Finland grants 134309 (Eye), 126925, 121584, 124282, 129378 (Salve), 117787 (Gendi), and 41071 (Skin), the Social Insurance Institution of Finland, Kuopio, Tampere and Turku University Hospital Medical Funds (grant 90M48 and 9N035 to TL), Juho Vainio Foundation, Paavo Nurmi Foundation, Finnish Foundation of Cardiovascular Research, Finnish Cultural Foundation, Tampere Tuberculosis Foundation and Emil Aaltonen Foundation (to TL). FINRISK has been primarily funded by budgetary funds of THL (National Institute for Health and Welfare). Important additional funding has been obtained from the Academy of Finland (grant number 139635 for VS) and from the Finnish Foundation for Cardiovascular Research. RFT is an Endowed Chair in Addiction for the Department of Psychiatry at the University of Toronto (CIHR grant TMH109787, NIH PGRN grant DA020830). Association analyses and imputation were run at the ELIXIR Finland node hosted at CSC IT Center for Science for ICT resources.

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SYM9D
SMOKESCREEN: A TARGETED GENOTYPING ARRAY FOR ADDICTION RESEARCH
James Baurley, PhD¹, Christopher Edlund, MS¹, Carissa Pardamean, MSc¹, David Conti, PhD², Andrew Bergen, PhD², BioReaml, SRI International

To help maximize collaborative efforts in advancing addiction research, we developed a genotyping array called Smokescreen; the content-customizable array was built upon previous studies analyzing human genetic variation, genetics of addiction, drug metabolism, and therapy response, with an emphasis on smoking and nicotine addiction. Relative to other substance-abuse disorders, smoking is the leading cause of preventable death in the United States and is associated with increased risk of disease and premature death. While tobacco control efforts and therapeutic interventions have made excellent progress in smoking prevalence reduction, obstacles remain in optimizing therapeutic effectiveness based on patient characteristics, such as genetic variation. The Smokescreen genotyping array includes 646,247 markers in 23 categories; its design covers genome-wide common variation (86%, 82%, and 91% in African (YRI), East Asian (ASN), and European (EUR) respectively); most of the variation with a minor allele frequency ≥ 0.01 in 1,014 addiction genes (85%, 90%, and 90% for YRI, EUR, and ASN, respectively), and all variation in regions related to smoking behavior and nicotine metabolism: CHRNA5-CHRNA3-CHRNB4 and CYP2A6-CYP2B6. The genotyping array designed for addiction research demonstrated its analytic validity and utility through pilot genotyping of HapMap and study samples. Of the 636 pilot DNA samples derived from blood or cell line biospecimens genotyped on the array, 622 (97.8%) passed quality control. In passing samples, 90.1% of markers passed quality control. Genotype reproducibility in 25 replicate pairs was 99.9%. For 137 samples that overlapped with HapMap2 release 24, genotype concordance was ≥ 99.9%. Based on 315 samples from nicotine metabolism and therapeutic studies, we identified variants at genome-wide significance (min p = 9.1E-15) in a region known to be highly influential on nicotine metabolism, serving as a further positive confirmation of the array’s design. These attributes enable researchers to perform genome-wide, candidate gene, and pathway-based association analyses on various addictions, including those related to smoking and tobacco use.
Funding: This project has been funded in whole or in part with Federal funds from the National Institute on Drug Abuse, National Institutes of Health, Department of Health and Human Services, under Grant No. DA038513, and Contract Nos. HHSN271201200005G and HHSN271201300004C. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

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SYM10
ADDRESSING TOBACCO USE AMONG INDIVIDUALS WITH MEDICAL AND PSYCHIATRIC CONDITIONS: CONTROVERSYS AND CHALLENGES

Cheryl A. Oncken, MD, University of Connecticut Health Center; Judith J. Prochaska, PhD, MPH, Stanford University; Damon Vidrine, DrPH, MS, University of Oklahoma Health Sciences Center; Graham W. Warren, MD, PhD, Medical University of South Carolina

Continuing to smoke adversely affects disease outcomes of individuals with co-occurring medical and psychiatric conditions, but addressing tobacco dependence is not well integrated into routine health care for these conditions. Co-occurring health conditions have the potential to either stimulate or interfere with motivation to quit and with the success of tobacco dependence treatment. This symposium will present new data on challenges and strategies for providing tobacco dependence treatment to individuals with 4 co-occurring health conditions--pregnancy, HIV infection, psychiatric illness, and cancer. As Chair, Dr. Nancy Rigotti will give a brief overview of research questions raised by co-morbid health conditions. Clinical topic experts will present data highlighting challenges and successes in treating tobacco dependence in patients with: (1) HIV infection (Dr. Damon Vidrine); (2) psychiatric illness (Dr. Judith Prochaska); (3) pregnancy (Dr. Cheryl Oncken); and (4) cancer (Dr. Graham Warren). Dr. Vidrine will present new data on the effect that an HIV diagnosis and/or change in status may have on subsequent smoking-related attitudes and behaviors. Dr. Oncken will describe examples where research findings are being translated into clinical care for pregnant smokers and address her findings about the use of electronic cigarettes in this population and implications for treatment. Dr. Prochaska will present findings of a new randomized trial testing different intensities of tobacco treatment initiated among smokers hospitalized in an inpatient psychiatry unit. Dr. Warren will describe strategies to implement tobacco cessation into the management of patients with cancer and address patient and institutional level challenges to implementing and sustaining evidence-based cessation support. As discussant, Dr. Tim McAfee, former Director of the CDC’s Office of Smoking and Health, will describe how CDC’s TIPS media campaign targeted smokers with these conditions in its messaging, and integrate clinical and a public health perspectives about addressing tobacco use in individuals with co-occurring medical and psychiatric conditions.

Justification: Continuing to smoke adversely affects disease outcomes of individuals with co-occurring medical and psychiatric conditions, but addressing tobacco dependence is not well integrated into routine health care for these conditions. Identifying evidence-based effective tobacco treatment strategies for these individuals is needed.

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SYM10A
TREATING TOBACCO USE AND DEPENDENCE DURING PREGNANCY

Cheryl Oncken, MD*, Ellen Dornelas, Phd, University of Connecticut School of Medicine

This presentation will focus on the treatment of tobacco use and dependence during pregnancy. Maternal cigarette smoking is associated with a number of health risks to mother, infant, and child. Despite the risks, most women continue to smoke during pregnancy. This presentation will briefly review the various health risks of cigarette smoking during pregnancy and the natural history of smoking during pregnancy and postpartum. The presentation will discuss the various different types of psychosocial and behavioral interventions (i.e., counseling, continuing...
SYM10C
HIV DIAGNOSIS AND DISEASE PROGRESSION: A TEACHABLE MOMENT FOR SMOKING CESSATION?
Damon Vidrine, DrPH†, George Kypriotakis, PhD, Roberto Ardoino, MD, Ellen Gritz, PhD, The University of Oklahoma Health Sciences Center, The University of Texas MD Anderson Cancer Center, The University of Texas Health Science Center at Houston Medical School

Modern antiretroviral therapy has significantly reduced AIDS-related mortality, yet mortality due to smoking-related diseases represents a growing concern. Currently available data indicate several striking trends: 1) prevalence of smoking among persons living with HIV (PLWH) is 2-3 times higher compared to the general population, 2) the combined prevalence of HIV and smoking is synergistic, and 3) PLWH who try to quit smoking experience high relapse rates. Results from the few smoking cessation trials for PLWH that appear in the literature have not been overly encouraging. Therefore, additional efforts to identify ways to boost cessation rates are much needed. To address this need, a prospective, non-intervention study was conducted to assess the relationship between HIV progression and smoking behaviors. Recently HIV diagnosed individuals were recruited at a large, safety net HIV clinic. Predictors of interest included time from HIV treatment initiation and progression (based on CDC criteria), while outcomes included intention to quit and biochemically verified abstinence. Baseline characteristics (n=361) were: mean (SD) age as 41.4 (11.9) years; 71.7% male; 67.3% African American; and mean (SD) 10.9 (2.7) years of education. Mixed effects modeling was used to evaluate the longitudinal relationship between HIV stage and the outcomes of interest. Results from the intention to quit model revealed a significant relationship for time (beta=0.16, p<0.01), the quadratic transformation of time (beta=-0.10, p<0.01) and HIV stage (beta=-0.80, p<0.01). The temporal pattern indicated that intention to quit increased from baseline to 3-months, then decreased through 12-months. Moreover, individuals with advanced HIV disease (vs. those without advanced disease) reported greater increases in quit intention at 3-months, and less reduction over time. Similar patterns were revealed for the smoking abstinence outcome. In sum, findings suggested that time from HIV care initiation and HIV disease progression were strongly associated with intention to quit and smoking abstinence. Thus, timing cessation treatment to HIV diagnosis and progression may enhance abstinence rates.

Funding: National Cancer Institute grant R01CA132636
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SYM10D
TOBACCO USE AND THE CANCER PATIENT: CONSIDERATIONS FOR IMPLEMENTING EVIDENCE-BASED CESSATION SUPPORT
Graham Warren, MD, PhD**, Medical University of South Carolina

Cigarette smoking by cancer patients and survivors causes adverse outcomes including increased overall and cancer-specific mortality, risk for developing a second primary cancer, and is associated with increased cancer treatment toxicity. Smoking and tobacco related products alter the biologic nature of cancer cells by stimulating increased proliferation, angiogenesis, migration and invasion, and resistance to conventional cancer treatments including chemotherapy and radiother- apy. New data show that smoking cessation can improve outcomes and improve cellular response to cytotoxic treatments. Whereas in surveys of over 3500 oncologists, 80-90% report that they ask about tobacco use and advise patients to quit, but only 30-40% assist patients by discussing medications or providing cessation support. A study of actively accruing cooperative group clinical trials found that 70% do not assess any form of tobacco use. In a survey of 887 oncologists from NC1 Designated Cancer Centers, 99% preferred cessation support being provided to them, while only 70% do not assess any form of tobacco use. In a study of 2765 patients who screened positive for tobacco use, an ‘opt out’ approach demonstrated only 3% of patients refused participation in a dedicated cessation support program while only 1.2% of patients received a mailed invitation partici- pation. In 250 lung cancer patients who participated in this program, quitting smoking significantly improved overall survival (HR 1.79, 1.14-2.82). Newly released guidelines on tobacco cessation from leading cancer organizations assist in providing guidance to helping deliver evidence-based cessation support. However, a multidisciplinary approach to identifying institution and practice specific barriers to tobacco assessment and cessation is critical to develop and implement sustainable access to cessation support for cancer patients.

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Corresponding Author: Graham Warren, MD, PhD, Medical University of South Carolina

SYM11
WHAT WE KNOW ABOUT APPEAL: IMPLICATIONS FOR PRODUCT REGULATION
Richard J. O’Connor, PhD, Roswell Park Cancer Institute; Andrea C. Villanti, PhD, MPH, Schroeder Institute for Tobacco Research and Policy Studies; David R. Strong, PhD, University of California, San Diego; Melissa B. Harrell, PhD, MPH, UT Health

The Center for Tobacco Products (CTP), Food and Drug Administration (FDA) has pre-market review authority over new tobacco products and the appeal of these products can impact marketing authorization decisions due to its impact on the population as a whole. Product standards may be adopted if they are appropriate for the protection of public health and one potential product standard that CTP is exploring addresses “appeal.” This symposium will explore the range of science addressing the appeal of tobacco products including product design, flavors, packaging and labeling, and marketing. The Roswell Park Cancer Institute presentation on product design will provide an overview on sensory effects, filter ventilation, and additives. New data from the nationally, representative longitudinal National Institutes of Health (NIH)/FDA Population Assessment on Tobacco and Health (PATH) Study baseline collection, September 2013- December 2014, will be presented on prevalence and reasons for use of flavored tobacco products among adults and youth. Investigators from the University of California, San Diego will present factors related to packaging and labeling that influence consumer perceptions, and the NIH/FDA University of Texas TCOIR5 will focus on youth tobacco product marketing at point-of-sale and in print publications. Discussion will focus on what has been learned about the appeal of cigarettes and relevance for new and novel products, and implications for future tobacco product regulation.

Justification: Discussion will focus on what has been learned about the appeal of cigarettes and relevance for new and novel products, and implications for future tobacco product regulation.
Funding: FDA Center for Tobacco Products
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SYM11A
LESSONS FROM LIGHT/LOW-TAR/MILD CIGARETTES FOR ASSESSING PRODUCT APPEAL
Richard O’Connor, PhD*, Roswell Park Cancer Institute

Multiple factors may contribute to the appeal of tobacco products, ranging from nicotine delivery, to sensory properties, to marketing and advertising, to consumer perceptions. So-called Light, Mild, and Low-tar cigarettes were introduced begin- ning in the 1960s in response to consumers concerns about smoking related dis- eases. It was hypothesized that reducing tar in cigarettes would reduce exposure to toxicants, and thus health risk. In retrospect, this introduction was problematic in a number of respects. First, smokers’ dependence on nicotine meant that they smoked these cigarettes more intensively to achieve satisfactory nicotine doses, meaning exposures were generally not reduced. Second, the primary means by which yields were reduced, filter ventilation, created sensory perceptions of a less harsh smoke, which reinforced marketing messages. Studies of smokers indicated that they were unaware of filter vents, and believed that less tar equated to better health. Smokers also perceived Light cigarette smoke as less harsh, even when engaged in compensatory smoking behaviors. Removal of misleading descriptors in the US and other markets over the last decade has not had lasting impacts in reducing such misperceptions, likely because of conditioned associations with packaging and sensory properties of smoke. This presentation will review the literature in this area, and describe its relevance to the assessment of the appeal of new and emerging products.
the perceived characteristics of individuals who smoke the brand, expectations or a third condition that presented Australian type graphic warning packaging the same brand repackaged in a plain pack with all industry images removed, cigarette pack from a popular US brand (Marlboro, American Spirits and Newport).

**SYM11C**

**APPEAL OF TOBACCO PRODUCT PACKAGING: INFLUENCES OF REMOVING BRAND IMAGERY**

David Strong, PhD*, University of California, San Diego

**BACKGROUND:** Good evidence suggests that cigarette packaging provides a highly visible form of advertising that has been used to establish brand identity, enhance the appeal of products, and promote conditioned cues for product use. However, judicial review found this evidence was not sufficient to allow the FDA to mandate removal of branding on packages. OBJECTIVE: In a series of studies cumulating in a randomized trial with repackaged cigarettes, we will test the relative effect of package imagery on product appeal, smoking attitudes, perceptions and behavior. METHOD: To conduct our first series of studies we recruited a web-enabled panel of 1000 US-smokers via Amazon’s Mechanical Turk®. First, in a between-group design, panelists were presented with either an image of a standard cigarette pack from a popular US brand (Marlboro, American Spirit, Newport), the same brand repackaged in a plain pack with all industry images removed, or a third condition that presented Australian type graphic warning packaging. Panelists then rated the packages they were presented on measures of appeal, the perceived characteristics of individuals who smoke the brand, expectations of product quality, and the price they would be willing to pay for the product. In a second study, we presented a different set of panelists the US pack alongside the plain pack or the Australian graphic warning pack. We asked each respondent to choose a preferred pack. After selecting a response, we asked panelists why they chose the option that they selected using an open response question along with standard questions about the appeal of the package, whether it communicated any health risk (e.g. amplification), and strength of preferences. Finally, in a third study we asked panelists to address an open-ended question assessing their reactions (e.g. perceived change in purchasing behavior) to the potential removal of industry images on packaging in the US market. All open-ended responses were analyzed using natural language processing implemented via a web-based service known as GroupSolver® (groupsolver.com). CONCLUSION: This study will provide useful evidence for US regulatory decisions on cigarette packaging and labelling.

**Funding:** National Cancer Institute and Food and Drug Administration grant to David R. Strong and John P. Pierce (R01CA190347)

**Symposium:** Tobacco Control Policy and Health Disparities
effects on health equity. This symposium will bring together researchers investigating policy-relevant factors involved in U.S. tobacco-use disparities. Presenters will discuss policy implications that arise from their findings, with particular focus on the proximate impact. The chair, Dr. Megan Roberts, will provide a brief introduction to tobacco-related health disparities and the drawbacks to an exclusively population-level approach. This broad overview will be followed by Dr. Shyanika Rose presenting an ecological momentary assessment study that found African Americans and Hispanics experience greater exposure to tobacco marketing. Her presentation will include discussion of how banning flavored tobacco products may reduce racial/ethnic disparities in tobacco use. Dr. Shelley Golden will present nationally-representative data modeling the potential effects of minimum price laws. Her projections will show how setting floor prices could reduce prevalence and socioeconomic disparities in smoking. Dr. Kurt Ribisl will present on the potential impact of a policy that would ban retailers from selling tobacco products within 1,000 feet of schools. His findings suggest such a proximity policy could reduce socioeconomic and racial/ethnic disparities in tobacco retailer density. Dr. Baezconde-Garbanati will present on the retail environment itself—specifically, retailers working in ethnic communities. Her findings include the prevalent misperception among retailers about the FDA authority and the factors behind retailers' failures to comply with federal tobacco regulations. Finally, the discussant, Micah Berman, JD, will briefly summarize the presentations and expound on their research and policy implications. This discussion will consider the types of health disparities research that will be most useful for guiding regulatory policy moving forward.

Justification: This symposium will inform public health and policy by providing information on policies that will have a pro-equity effect on tobacco-related health disparities.

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SYM12A
WOULD A BAN ON FLAVORED TOBACCO PRODUCTS REDUCE TOBACCO USE DISPARITIES? FUTURE DIRECTIONS FROM A PILOT STUDY OF YOUNG ADULTS
Shyanika Rose, PhD1*, Hoda Elmaaty, MPH1, Ashley Mayo, BA1,2, Andrew Anesetti-Rothermel, PhD1, Thomas Kirchner, PhD1, Ray Niaura, PhD1,4, Schroeder Institute for Tobacco Research and Policy Studies at Truth Initiative, 1Boston University, 2New York University, 4John Hopkins University

A potential ban on non-cigarette flavored tobacco products is often considered a policy option to reduce the use of tobacco products by youth and young adults. However, few studies examine the potential of such a policy to reduce disparities in racial/ethnic minority populations due to differential use, perceptions of flavored products, or tobacco advertising exposure. The current pilot study examined susceptibility to future flavored tobacco use among a sample of young adult (18-25) non-current smokers in Washington, DC (n=31) and conducted an ecological momentary assessment (EMA) of exposure to tobacco advertising over a 14 day period via text messaging (n=1,816 observations). We report descriptive statistics and results of multi-level analyses of the EMA data clustered by respondent adjusted for gender, location, and exposure to tobacco use. Almost all respondents (87%) had used at least one flavored/menthol tobacco product in their lifetime; of these, 48% reported trial of 2 or more flavored products. Nearly 76% of young adult non-current smokers indicated susceptibility to future flavored tobacco use. Almost 75% of respondents reported at least one or more tobacco flavor descriptors as more appealing than ‘regular’ tobacco and 58% reported one or more descriptors as being less harmful. Given small sample sizes, no significant differences were found by race/ethnicity. However, in the EMA data, African Americans (aOR: 3.0 95%CI 1.0, 9.0) and Hispanics (aOR: 8.0 95%CI 1.6, 40.5) were significantly more likely than White respondents to report exposure to tobacco advertising in the course of daily activities. Young adult non-current smokers who experimented with flavored tobacco products are susceptible to future exposure, and have misperceptions about their harm relative to ‘regular’ tobacco products. African Americans and Hispanics were also more exposed to tobacco advertising. However, future research is needed to examine whether a potential ban on flavored tobacco products may help to reduce disparities in tobacco use in racial/ethnic minority communities, potentially in part through reduced advertising exposure to flavored products.

Funding: Truth Initiative

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SYM12B
PROJECTING THE IMPACT OF STATE-BASED MINIMUM CIGARETTE FLOOR PRICES ON SOCIOECONOMIC SMOKING DISPARITIES
Shelley Golden, PhD, MPH1, Matthew Farrelly, PhD2, Douglas Lake, PhD2, Jamie ChiQUI, PhD, MHS1, Kurt Ribisl, PhD1, 1University of North Carolina, 2RTI, 3Washington University in St. Louis, 4University of Illinois at Chicago

BACKGROUND: Other than raising excise taxes, we know little about the influence of price-related policies on smoking behavior and disparities. About half of all states have minimum price laws (MPLs) that require a minimum percent mark-up on prices, but research on the impact of these laws is inconclusive. New York City recently passed a different type of cigarette MPL that sets a $10.50 floor price below which no pack can be sold. METHODS: To test the potential impact of this new style of MPL, we constructed a set of possible state MPL floor prices. We then projected the impacts of implementing each MPL on prices and smoking using two estimations of price elasticity, one that assumes everyone is equally price responsive (e = -0.3) and one that assumes more responsiveness among lower income smokers (e = -0.35) among high income smokers (e = -0.15). We used cigarette price and smoking behavior data reported by 23,733 smokers in the 2010-2011 Tobacco Use Supplement of the Current Population Survey as baseline measures.

RESULTS: We project that state MPLs set at the average paid price reported by smokers in the state could raise average prices by $0.42; slightly higher MPL floor prices could result in average price increases of $1.00 or more. Low income smokers would continue to pay lower prices than high income smokers, as they reported at baseline, but MPLs would narrow these price gaps. At baseline, 16.2% of the sample smoked, but prevalence was 9.6 percentage points higher among low income (20.8%) than high income (11.2%) respondents. When MPL floor prices are set at 125% of a state’s average reported price or higher, we project that overall smoking rates will drop below 15%. Smoking rates would decline more for low income groups, shrinking the prevalence disparities to 8.4 percentage points. Low income smokers reported smoking 0.5 more cigarettes per day than high income smokers, but under a 125% MPL, that difference in cigarettes consumed by low vs. high income smokers would disappear. CONCLUSION: Floor price MPLs set to levels slightly above what consumers currently report paying could reduce prevalence and shrink socioeconomic disparities in smoking.

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SYM12C
REDUCING TOBACCO RELATED DISPARITIES THROUGH POINT-OF-SALE REGULATION: DIFFERENTIAL IMPACT OF BANNING TOBACCO PRODUCT SALES NEAR SCHOOLS
Kurt Ribisl, PhD1*, Douglas Lake, PhD2, Doreiha Snider, MPH1, Amy Sorg, MPH1, Sarah Moreland-Russell, PhD1, 1University of North Carolina, 2Washington University in St. Louis

OBJECTIVES: There are great socioeconomic and racial/ethnic disparities in tobacco retailer density and amount of point of sale (POS) advertising. POS policies may have the potential to reduce and eliminate these disparities. Could a policy of banning tobacco product retailers from operating within 1,000 feet of schools reduce existing disparities in tobacco retailer density? METHODS: We geocoded all tobacco retailers in Missouri (n=4730) and New York (n=17,672) and linked them with Census tract characteristics. We then tested the potential impact of a proximity policy that would ban retailers from selling tobacco products within 1,000 feet of schools. RESULTS: Our results confirmed socioeconomic and racial/ethnic disparities in tobacco retailer density, with more retailers in lower income and racially diverse areas. However, a high proportion of retailers located in these areas were in urban areas, which also have stores located in closer proximity to schools. In New York after a ban on tobacco product sales within 1,000 feet of schools, the number of tobacco retailers per 1,000 people went from 1.28 to 0.36 in the lowest income quintile, and from 0.84 to 0.45 in the highest income quintile. In both New
SYM12D  BRIDGING DISPARITIES IN TOBACCO REGULATORY RESEARCH IN RETAIL ENVIRONMENTS IN VULNERABLE COMMUNITIES

Lourdes Baezconde-Garbanati, PhD, MPH, MA*, Roberts Garcia, MPH, Claradina Soto, PhD, Kacie Blackman, PhD, Patricia Escobedo, MPH, University of Southern California

The point-of-sale and retail environments serve as main communication channels between tobacco companies and consumers. Advertisements and price promotion in the retail environment has become the largest expenditure category among tobacco companies. Small/independent retailers in low-income African-American, Korean, American-Indian reservations and non-Hispanic-White neighborhoods and "bodegas" in the Hispanic/Latino community are particularly targeted for distribution and promotion of tobacco products. Given this disparate marketing, we conducted a community engaged pilot study to better understand information gaps, knowledge and attitudes and barriers to compliance towards federal tobacco regulation among retailers in ethnic communities in California. We randomized listings of retailers licensed to sell tobacco and engaged community workers to approach stores in their respective neighborhoods, obtaining 38 surveys and store observations. Findings show that 80% of respondents were aware of the FDA. But only 40% believed they had regulatory authority over tobacco products. Some African-American retailers feared researchers were from the government, wanting to shut them down. Among American-Indians sovereignty issues superseded observation of tobacco state regulation. Some AI retailers were not aware of the FDA's authority on tobacco product regulation in tribal lands. Korean-owned stores were prevalent in predominant African-American communities, adding a language complexity we did not expect. When asked how to best communicate regulatory messages to ethnic retailers, 96% preferred in person, 88% regular mail, 64% mobile phones, and 64% email. Social media, Facebook (28%) and Twitter (16%) were not as preferred. To bridge tobacco-disparities more education is needed regarding federal authority over tobacco products. Culturally tailored and in-language messaging should use traditional media channels to inform retailers in vulnerable communities. Messages in relevant languages of the retailers, regardless of ethnic neighborhood where they operate, are necessary when conducting tobacco research or education to reduce disparities.

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SYM13A  SMOKING ABSTINENCE SYMPTOMS DO NOT RESOLVE IN 67 DAYS: A RANDOMIZED CONTROLLED TRIALS

David Gilbert, PhD*, Southern Illinois University Carbondale

A rapidly growing number of studies have concluded that significant improvements in psychological functioning occur in individuals who successfully maintain abstinence. In contrast, three rigorously controlled randomized experimental studies funded by the National Institute on Drug Abuse (NIDA) have provided evidence suggesting that negative affect-related smoking abstinence symptoms last for more than 31-45 days in most individuals. This presentation will summarize a new NIDA-funded randomized controlled experimental study that supports the view that negative affect-related symptoms last for more than 67 days. As part of a larger investigation, dependent smokers (N=56) were randomly assigned with a 35/21 ratio to either: 1) a Quit Group, or 2) a delayed-quit Smoke Group. Large financial incentives maximized sustained abstinence across the 67-day study period. Symptoms and biochemical verification of abstinence were assessed at 2-7-day intervals throughout the abstinence period. Of the 35 participants randomized to the Quit Group, 25 (71.4%) were biologically verified smoking abstinence across the 67 days. Abstinence-related increases in negative affect-related abstinence symptoms in the Quit Group did not resolve relative to Smoke Group (N=19 completers of the 21 assigned) levels across the 67-day abstinence period. Positive affect was not impacted by abstinence. In contrast, Quit Group craving to smoke increased dramatically immediately after quitting and then subsequently progressively decreased across time to levels far lower than their baseline and smoke group levels. Given that negative affect and more generally withdrawal symptoms did not resolve by the end of 67 days of abstinence supports two, not necessarily competing, possibilities: 1) mood takes longer than 67 days to recover; and 2) elevations of negative affect result from the unmasking of vulnerability to negative affect that do not resolve.

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SYM13B
SMOKING CESSATION AND LONG-TERM CHANGE IN MENTAL HEALTH: EVIDENCE FROM EPIDEMIOLOGICAL RESEARCH
Gemma Taylor, PhD*, University of Bristol

Smokers with and without mental health disorders report that smoking offers mental health benefits and state this as a powerful reason to continue smoking. Many smokers and clinicians also believe that smoking cessation may leave quitters worse-off mentally or unable to cope with stress. However, there is a strong association between smoking and poor mental health, with smokers reporting more symptoms of mental ill-health compared to non-smokers. There are three competing hypotheses which aim to explain this relationship: The self-medication hypothesis suggests that smokers use tobacco for its therapeutic properties and that mental health deteriorates after cessation; in contrast, the misattribution hypothesis suggests that smoking causes poor mental health through the nicotine withdrawal cycle which leads smokers to believe that smoking is therapeutic, and that after breaking the nicotine cycle mental health improves; Alternatively, it could be that a third common factor such as genes or environment lead to the co-occurrence of smoking and poor mental health, and that neither smoking nor mental health will change unless the third factor changes first. Gemma will present the most up-to-date epidemiological evidence in relation to these three competing hypotheses, drawn from systematic reviews and meta-analyses, and studies adopting causal methods. Further discussion will focus on the strength of the evidence and potential clinical applications in both general and psychiatric populations.

Funding: National Institute for Health Research, Health Technology Assessment Programme
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SYM13C
METHODOLOGICAL ISSUES IN ASSESSING NICOTINE WITHDRAWAL TRAJECTORIES IN SMOKING CESSATION STUDIES
Danielle McCarthy, PhD*, Krysten Bold, PhD, Haruka Minami, PhD, Vivan Yeh, PhD, Rutgers, the State University of New Jersey

Nicotine withdrawal plays a critical role in maintaining cigarette smoking and precipitating returns to smoking during cessation attempts. Real-time tracking of withdrawal experiences using ecological momentary assessment (EMA; Stone & Shiffman, 1994) during smoking cessation captures the short-term withdrawal pain of quitting. Tracking withdrawal in real-time is possible through EMA using personal digital or cellular devices to capture individuals’ subjective experiences and behavioral reports in their natural environments. Methodological factors can influence the patterns observed in withdrawal EMA data, however. Understanding of the impact of these factors on EMA design and analysis is central to understanding the short-term pain and long-term gains associated with cessation. Data from two studies will be presented to illustrate the influence of self-monitoring intensity and the choice of assessment time-frames on withdrawal and withdrawal-smoking-relapse associations, with both showing that the frequency of EMA self-monitoring of withdrawal during the first 3 weeks of a smoking cessation attempt. Results indicated that more frequent self-monitoring (6 times daily) suppressed several withdrawal symptoms (anger, anxiety, craving, hunger) and positive affect relative to once daily monitoring, despite failing to have a significant impact on initial smoking cessation or prolonged abstinence. Self-monitoring frequency had significant effects on withdrawal even after controlling for smoking status, suggesting that the short-term pain associated with quitting is not as closely tied to abstinence as we might think and can be altered through non-pharmacological means. A second study of smokers attempting to quit (N=109) showed that relations between affect and smoking temptations and smoking lapses were notably stronger in the first week post-quit than in subsequent weeks, even when controlling for prior smoking and temptation status. This suggests that affect-smoking motivation relations are time varying and choice of assessment period may shape conclusions about the strength of these relations.

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SYM13D
WHAT EMA DATA TELL US ABOUT PRIMARY NICOTINE WITHDRAWAL, ITS DURATION, AND ITS ROLE IN RELAPSE
Saul Shiffman, PhD*, University of Pittsburgh

Nicotine withdrawal is central to the concept of tobacco addiction, and particularly to drive the high rates of relapse seen in the first weeks after cessation. A central feature of nicotine withdrawal is emotional distress. Relapse episodes are commonly precipitated by emotional distress, which is thought to derive from nicotine withdrawal. This paper summarizes data using Ecological Momentary Assessment – collection of data in real time in real-world settings – to address these issues. One study assessed 215 smokers who quit without pharmacological treatment for two weeks of baseline and four weeks post-quit. Negative affect increased when quitting, but had returned to the individual’s baseline levels within 10 days, suggesting that primary withdrawal is short-lived. Analyses of the role of affective distress in relapse showed that relapse was not predicted by tonic or decreasing distress but rather by acute increases in distress in the hours leading to smoking, suggesting the influence of acute stressors, rather than tonic negative affect due to withdrawal. This was also suggested by a second study that analyzed relapse process in 324 smokers randomized to either high-dose nicotine patch (35 mg) or placebo. Active patch treatment completely replaced baseline nicotine levels and completely eliminated any increase in negative affect when quitting, yet affective distress in relapse was still associated with risk of relapse, both prospectively, in the days and hours leading to a lapse, and immediately, at the moment of the initial lapse. These findings suggest that primary withdrawal is short-lived and that the emotional distress associated with relapse is not due to withdrawal, per se. However, it is possible that nicotine withdrawal drives relapse not by directly inducing tonic levels of distress, but by making abstinent smokers more emotionally reactive to external stressors. EMA data may be useful in better understanding the role of withdrawal in both tonic increases in emotional distress and in smokers’ reactivity to external stressors.

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SYM14
MAKING THE CIGARETTE PACK A COMPLETE HEALTH COMMUNICATIONS TOOL
David Hammond PhD, University of Waterloo; Ron Borland PhD, Cancer Council Victoria; James F. Thrasher PhD, University of South Carolina; Crawford Moodie PhD University of Stirling

Tobacco packaging is an important communications tool for governments. Health warnings on packs are a simple and credible means of communicating the health risks of smoking, with the impact of warnings influenced by their design. Aside from design, another way to increase the salience of warnings is via plain or standardized packaging. Despite growing interest in plain packaging, particularly within Europe, Australia remains the only country to have implemented this measure. As such, the findings from here will be of significant interest elsewhere. The exterior of tobacco packaging is obviously crucial for communication, as this is something that all consumers are exposed to, but the pack interior is also important. Tobacco companies use inserts to inform consumers of pack redesigns, brand extensions, new product development, promotions, and encourage consumers to challenge tobacco regulation. Only in Canada are inserts with positive messaging about quitting required, although little is known about their impact. Similarly, there is a dearth of research exploring how the cigarette - the primary package – could also potentially be used to deter smoking. In the first talk, Hammond will discuss the role of health warnings, with a focus on the effectiveness of health warning content, using data from the ITC four country survey. Borland will then discuss the range of impacts of plain packaging in Australia, using data from three waves of the ITC Australia survey. Looking inside the pack, which is extremely important, the interior of the pack is also important. The range of impacts of plain packaging in Australia, using data from three waves of the ITC Australia survey. Looking inside the pack, which is extremely important, the interior of the pack is also important. The range of impacts of plain packaging in Australia, using data from three waves of the ITC Australia survey. Looking inside the pack, which is extremely important, the interior of the pack is also important. The range of impacts of plain packaging in Australia, using data from three waves of the ITC Australia survey. Looking inside the pack, which is extremely important, the interior of the pack is also important. The range of impacts of plain packaging in Australia, using data from three waves of the ITC Australia survey.
SYM14A
WHAT TYPE OF HEALTH WARNING MESSAGES ARE MOST EFFECTIVE? POST-IMPLEMEN TATION DATA FROM THE ITC FOUR-COUNTRY STUDY

David Hammond, PhD*, Jessica Reid, MSc*, Geoffrey Fong, PhD, Ron Borland, PhD, James Thrasher, PhD*
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INTRODUCTION: The selection of message content is a critical factor in the effectiv eness of health warnings on packages. To date, most evidence derives from “pre-implementation” testing. This study uses post-implementation evidence to examine which warnings are most salient and potential differences among sub-groups of smokers. METHODS: Data were analysed from Wave 9 (2013-15) of the ITC Four-country study, a longitudinal cohort study of adult smokers conducted in Australia (n=1,492), Canada (n=1,582), the UK (n=1,403); and the US (n=2,311). Message recall was assessed using an unprompted recall measure. Interviewers used a pre-coded checklist and images to identify specific warnings on packages. Logistic regression models were used to examine sociodemographic and smoking correlates of message recall. FINDINGS: Most respondents recalled at least one warning on packs in Canada (84.0%), the US (87.4%), the UK (87.7%) and Australia (87.8%). In the three countries with pictorial warnings, the most recalled messages displayed graphic depictions of health effects. In Canada, smokers were most likely to recall warnings on oral cancer (29.9%), pregnancy (24.3%) and heart disease (20.8%). In Australia, smokers were most likely to recall the warnings for lung cancer (52.9%), peripheral vascular disease (49.3%) and to horirn babies (44.2%). UK smokers were most likely to recall warnings on slow and painful death warning (36.1%), fatal lung diseases (29.1%) and the “toxic chemicals” (19.0%). In the US, smokers were most likely to recall warnings on lung cancer, heart disease, emphysema and pregnancy (52.7%), pregnancy/fetal injury warning (43.1%) and quitting smoking (21.6%). Sociodemographic correlates and associations with intentions to quit will be presented for each country. CONCLUSIONS: The findings are consistent with pre-implementation testing, in that images drive the salience of health warnings. Cessation related messages and content were associated with lower levels of recall, with only modest differences in message recall among sub-groups of smokers. Implications for message design will be discussed.

Funding: The data collection for the ITC 4 Country Project is supported by grants R01 CA 100362 and PS0 CA111236 (Roswell Park Transdisciplinary Tobacco Use Research Center, and P01 CA138389, R01 CA090955) from the National Cancer Institute of the USA, Robert Wood Johnson Foundation (045734), Canadian Institutes of Health Research (57987, 79551, and 115016), Commonwealth Department of Health and Aging, Canadian Tobacco Control Research Initiative (014578), National Health and Medical Research Council of Australia (265903, 450110, 10059522), Cancer Research UK (C312/A3726, C312/A6465, C321/ A11039, C312/A1943). Additional support was provided by a CIHR Public Health Agency of Canada Chair in Applied Public Health (DH).

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SYM14C
CAN CIGARETTE PACKAGE INSERTS PROMOTE EFFICACY BELIEFS AND SUSTAINED QUITTING BEHAVIOR? LONGITUDINAL DATA FROM ADULT SMOKERS IN CANADA, 2012 - 2014

James Thrasher, PhD*, Kamala Swayampakala†, David Hammond, PhD*, Michael Cummings, PhD†, Dien Anshari*1, James Harden†, University of South Carolina, 2University of Waterloo, 3Medical University of South Carolina

INTRODUCTION: More than 70 countries have implemented prominent pictorial health warnings on cigarette packages. However, package inserts (i.e., small printed leaflets) remain an underutilized medium for communicating with consumers even though tobacco companies have long used inserts to promote their products. In June 2012, Canada implemented new pictorial warnings along with package inserts containing messages both about the benefits of quitting (i.e., response efficacy) and to promote self-efficacy to quit. This study assessed smokers’ attention towards warnings and inserts and their relationships with downstream efficacy beliefs and cessation. METHODS: Data were analysed from a prospective online consumer panel of adult Canadian smokers who were surveyed every four months between September 2012 and September 2014. Generalized Estimating Equation models assessed associations between reading inserts, reading warnings and subsequent efficacy beliefs (self-efficacy to quit, response efficacy), quit attempts, and quit attempts that were sustained for 30 days or more. Models adjusted for socio-demographics, standard smoking-related variables, and time-in-sample effects. RESULTS: Over the study period, reading warnings significantly decreased (p<0.0001) while reading inserts increased (p=0.004). More frequent reading of warnings was associated independently with stronger subsequent response-efficacy (often/very often vs never=0.28, 95% CI: 0.11–0.46). More frequent reading of inserts was associated independently with stronger self-efficacy to quit at follow-up (Btwice or more vs none=0.30, 95% CI: 0.11–0.46), downstream quit attempts (ORtwice or more vs none= 1.75, 95% CI: 1.35–2.28), and quit attempts lasting 30 days or longer (ORtwice or more vs none=1.53, 95% CI: 1.05 – 2.23). CONCLUSIONS: More frequent reading of package inserts was associated with downstream self-efficacy to quit, quit attempts, and more sustained abstinence from smoking. To complement pictorial warnings that illustrate smoking-related harms of smoking on pack exteriors, policy makers should consider using pack inserts with information that targets smokers who want to quit.

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SYM14B
EARLY IMPACTS OF STANDARDISED (OR PLAIN) PACKAGING ON SMOKERS: FINDINGS FROM ADULT SMOKERS

Ron Borland, PhD*, Cancer Council Victoria

INTRODUCTION: The Australian government mandated standardised packaging for all tobacco products from December 2012. At the same time graphic health warnings (GHWs) on the front surface increased from 33% to 75% and a brightly coloured overlay was added to the text warning about harmful constituents. These changes will have markedly reduced, but not eliminated the extrinsic value associated with specific brands and reduced the capacity of smokers to differentiate not only brands but variants within brands. Behaviour theory would thus suggest that this will reduce the value of smoking to the smoker, and thus nudge some smokers towards quitting especially those for whom image-related reasons are stronger. However, in Australia where there has been extensive public education about the health risks of smoking and smoking has become largely denormalised, effects may be smaller than might be expected where this was not so. METHODS: Review of the evidence to date, focusing on that from the ITC (Australia) survey (including unpublished data), but interpreting that evidence in the light of published work from other studies. The ITC study has three waves of data, collected approximately 12 months before the packaging changes, 4 months and 22 months after. There were about 1100 smokers at each wave. Retention of the cohort was around 70% wave to wave, with replenishment from the same sampling frame. RESULTS: Smokers became much more supportive of the changes post-implementation. Most desirable reactions to GHWs were stronger, especially avoidance, and there was some evidence of stronger relationships with subsequent quitting activity. Indicators of brand identification declined, but were unrelated to quitting interest. There has been an increase in reported use of budget brands and having no regular brand. CONCLUSIONS: Standardised packaging with larger GHWs has had modest positive impacts on smokers in all areas investigated. However, for cessation, at least, it has not been a game-breaker, but adds another element to a comprehensive approach.

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INTRODUCTION: Globally, the factory-made cigarette remains the most popular form of nicotine consumption. Although its importance as a promotional tool has grown, there remains a dearth of research exploring how smokers perceive the range of cigarettes available on the market, and how cigarette appearance could potentially be used to deter smoking. METHODS: Twenty focus groups were conducted in Glasgow and Edinburgh in 2015 with adult smokers (N=120) segmented by age (16-17, 18-24, 25-35, 36-50, >50), gender and social grade, to explore perceptions of slimmer, coloured and capsule (with capsules in the filter that can be burst to change the flavour) cigarettes, and also cigarettes displaying the warning ‘Smoking kills’. RESULTS: Pink coloured and slimmer cigarettes were generally appealing to younger female groups. Most males viewed them as ‘advertising for women’s cigarettes’. Slim cigarettes were typically perceived as less harmful and used by females, people who smoke to fit in (as it would be ‘smoking air’), children, and smokers wanting to quit. Capsule cigarettes were often viewed as designer cigarettes, being desirable, fun and dynamic, particularly among younger groups. The double capsule cigarette (where one capsule changes the flavour to mint and the other to peppermint) was consistently viewed as appealing, tempting, cool, and alluring to youth. The capsule cigarettes were viewed as glamourising smoking by some, who suggested that they should be banned. Cigarettes with health warnings were found to reduce appeal, prolong the health message and portray a very negative image. They were also considered difficult to avoid, would influence how people feel about smoking, reduce smoking in front of others, and act as a deterrent to smokers and non-smokers alike. CONCLUSIONS: The cigarette is clearly a powerful communications tool, which can help to create appeal and convey messages about the user and related harm, with the findings offering some insight into the continuing global growth of capsule cigarettes. The findings also suggest that the inclusion of a warning on cigarettes may have a number of potential public health benefits.

Funding: Cancer Research UK (Grant number: C16943)
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SYM15B
AN EXPERIMENTAL TEST OF CO2-INDUCED PANIC AROUSAL AND ANXIETY SENSITIVITY IN PREDICTING NEGATIVE SMOKING REINFORCEMENT

Samantha Farris, MA*, Michael Zvolensky, PhD2, 1Alpert Medical School of Brown University and University of Houston, 2University of Houston and The University of Texas MD Anderson Cancer Center

INTRODUCTION: The extent to which negative reinforcement smoking is motivated by abrupt physiological arousal is unknown. Anxiety sensitivity (AS; the tendency to catastrophically interpret the meaning of anxiety-relevant sensations) may identify high-risk smokers who are more likely to rely on cigarettes for the (perceived) negative reinforcing properties, especially in the context of a physiological (panic-relevant) stressor. The current study tested the role of laboratory-induced panic arousal in predicting changes in smoking urges and smoking behavior, and the conditional effect of AS. METHOD: Adult daily smokers (n = 90) were recruited to participate in a single-session experimental study. Participants were randomly assigned to inhale single vital capacity inhalation of 35% CO2-enriched air (n = 45) or compressed room air (n = 45). Smoking urges and smoking topography were assessed before and after the challenge. RESULTS: Results revealed a main effect of condition on smoking urges post-challenge (b = 81.26, p = .048; Cohens d = -0.45), such that smokers exposed to the 35% CO2-air reported significantly higher urges post-challenge, relative to the room air group. There was a significant interaction between anxiety sensitivity and experimental condition (b = -9.96, p = .014; Cohens d = -0.56); high anxiety sensitive smokers exposed to 35% CO2-air reported significantly lower levels of smoking urges, relative to low anxiety sensitive smokers. The same conditional effect was non-significant for those exposed to room air. There was a significant condition effect for average puff volume (b = -8.11, p = .048) and puff duration (b = -144.39, p = .050); exposure to 35% CO2-air, relative to room air, resulted in smaller average puff volumes and shorter average puff inhalations (Cohens d = -0.43); there was no interactive effect of anxiety sensitivity. DISCUSSION: Physiological distress may immediately decrease subjective smoking urges and changes in puff behavior likely due to intensity of the cardiorespiratory distress. Findings are contextualized with the existing panic-smoking literature.

Funding: Ms. Farris is supported by pre-doctoral National Research Service Award (F31-DA035564).

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SYM15C
SOCIAL ANXIETY AND SMOKING-TO-COPE AS RISK FACTORS FOR SMOKING MAINTENANCE AND RELAPSE: THE ROLE OF CRAVING

Noreen Watson, PhD*, Kenneth DeMarree, PhD, Hunter King, BA3, Alison Wagner1, Lee Cohen, PhD, 1Fred Hutchinson Cancer Research Center, 2University at Buffalo, 3Minnesota State University, Mankato, 4Texas Tech University, 5University of Mississippi

BACKGROUND: Research indicates that social anxiety (SA), at clinical and sub-threshold levels, is a risk factor for the maintenance and relapse of smoking behaviors. Particularly high levels of cigarette craving during abstinence and coping-related smoking motives may play a large role in explaining the relationship between SA and smoking. However, it is unclear how these variables interact with one another in real-time to prospectively predict risk for relapse (e.g., craving). Therefore, we tested the idea that, under conditions of smoking abstinence, smokers with high levels of SA who report smoking to cope (with symptoms of SA) would be especially likely to experience high levels of cigarette craving in the presence of a social stressor. METHODS: Participants (n = 49) were daily smokers (≥ 5 cigarettes per day) between the ages of 18 and 30. On Day 1, participants completed baseline questionnaires (e.g., trait measures of social anxiety and smoking-to-cope (STC)) and were asked to refrain from smoking for 24 hours, until after the second session. On Day 2, participants engaged in a social stressor task while deprived from nicotine. Subjective ratings of cigarette craving and state levels of social anxiety were assessed a total of six times: three times before, twice during, and once after the task. Data were analyzed via multilevel modeling. RESULTS: Consistent with hypotheses, trait levels of SA (b = .26, p = .012) and smoking-to-cope (b = .15, p = .019) significantly predicted cigarette craving in response to the social stressor task such that they were predictors of craving at times of high social anxiety, and stress, but not at times of low stress. State levels of SA significantly predicted craving regardless of when it was assessed (b = 4.73, p < .001). CONCLUSIONS: Overall, these findings suggest that smokers high in social anxiety (state and trait) and STC may be at risk for continued smoking and relapse because of the intensity of cigarette cravings they experience during stressful social situations. Thus interventions that address ways to cope with symptoms of social anxiety and strong cravings may be particularly important for this group of smokers.

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SYM15D
PRELIMINARY EVIDENCE OF YOGA’S ABILITY TO TARGET ANXIETY-RELATED FACTORS CONTRIBUTING TO SMOKING MAINTENANCE AND RELAPSE

Johnna Medina, MA*, Natalie Tunnell, Jasper Smits, PhD, The University of Texas at Austin

Early smoking lapse following quit-attempt is common in those with anxiety sensitivity (AS), which is associated with greater smoking and withdrawal symptoms during acute nicotine withdrawal. Increasing evidence promotes yoga for attenuating anxiety, cigarette craving, and putative biological mediators of nicotine withdrawal, such as cortisol. Further, adjunct yoga has shown to enhance CBT for smoking cessation. Here, we present preliminary findings from an ongoing RCT examining the effects of a yoga intervention on smoking in high-AS females. Using a linear regression analysis, we identify several determinants of reduced daily cigarette smoking following the intervention phase, including participation in yoga (i.e., random condition assignment); nicotine dependence status; and AS improvement by week-9. Nineteen women (Mage=30.05, SDage = 8.93) with elevated AS (Anxiety Sensitivity Index (ASI) score ≥ 20) were randomized to YOGA (n = 12) or WL (n = 7) preceding a self-guided smoking quit attempt made 1-week post-intervention. Participants were assessed at baseline for smoking point-prevalence (PP) and the nicotine dependence symptom, “immediacy to smoke after waking” (item on the Fagerstrom Test of Nicotine Dependence (FTND), rated from “1” (within 5 min.) to “4” (after 60 min.). PP and ASI were reassessed post-intervention the evening of quit. Hierarchical linear regression, controlling for age, tested effects of Condition, FTND-immediacy, and ASChange on PPChange. Consistent with our prediction, Condition (β = -2.90; p < .05), FTND—immediacy (β = 2.02; p < .01), and ASI score change (β = -2.70; p < .01) predicted PPChange. In addition, we found a significant Condition x FTND-immediacy interaction (β = 2.15; p = .05), such that yoga (but not WL) facilitated reductions in smoking across levels of baseline nicotine dependence. However, yoga was more effective at reducing daily point-prevalence for those rating lower morning immediacy-to-smoke. Our results highlight yoga as a potential protective buffer against the deleterious effects of high nicotine dependence (i.e., which consequence higher withdrawal intensity) on quit success in anxiety-vulnerable populations.

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SYM16
TESTING ADDICTION THEORY-BASED MECHANISMS OF SMOKING BEHAVIORS: FROM CLINICAL TREATMENT TO NOVEL HUMAN LABORATORY PARADIGMS

Brian Hitsman, PhD, Northwestern University Feinberg School of Medicine; Lee Hogarth, PhD, University of Exeter; Amanda Mathew, PhD, Northwestern University Feinberg School of Medicine; Andrea King, PhD, University of Chicago

Recent advances in human laboratory-based studies of smoking behavior offer exciting opportunities to bridge the gap between theoretical accounts of nicotine dependence and real-world smoking behavior. In particular, the development of novel analog tasks helps to model key addiction processes observed in the context of clinical treatment (e.g., lapse, relapse); isolate the impact of intra-individual and environmental risk factors on these and other micro processes; and contribute to the development and refinement of theory-guided clinical intervention. This symposium brings together researchers who are conducting innovative and novel smoking cessation research utilizing both human laboratory and clinical trial meth-
ODY. Using data from an ongoing clinical trial of varenicline for adult smokers with cancer, Dr. Hitsman will report the results of a study that examines the relative contributions of affect and cognitive functioning in promoting smoking persistence. Dr. Hogarth will extend the focus to the human laboratory by using a novel mood induction to assess smoking behavior on a laboratory analog task in adult daily smokers. Dr. King will expand the focus to newer tobacco products in a socio-behavioral lab model of young adult daily smokers’ affect and smoking urge responses to exposure to second generation e-cigarette use. Finally, Dr. Munafò will frame findings in the context of theoretical accounts of addiction and highlight how these data inform our understanding of nicotine dependence and guide the development of more effective smoking cessation interventions.

**SYM16A COGNITIVE IMPAIRMENT, BUT NOT NEGATIVE OR POSITIVE AFFECT, PREDICTS SHORT-TERM ABSTINENCE AMONG SMOCKERS WITH CANCER**

Brian Hitsman, PhD*, Anna Veluz-Wilkins, MA*, Sonja Blazekovic, BA*, Lee Hogarth, PhD, Robert Schnoll, PhD, Northwestern University Feinberg School of Medicine, 1Northwestern University School of Medicine, 2University of Pennsylvania Perelman School of Medicine, 3University of Exeter

Negative emotional states and cognitive impairment are key barriers to smoking cessation, especially among clinical populations, such as cancer patients. In this study, we evaluated the relative contribution of negative/positive affect and cognitive functioning in predicting short-term abstinence among cancer patients enrolled in smoking cessation treatment. Participants were 117 patients who reported ≥ 5 cigarettes per day as a part of a protocol to assess cancer patients with a cancer diagnosis within the past 5 years, and who completed the 12-week open label phase of a clinical trial of extended varenicline. Participants (50% female, 27% Black) smoked 14.5±2.8 cigarettes per day for 40.4±11.6 years. Prior to treatment, participants completed the Positive and Negative Affect Scale (positive affect M=35.6±7.9, negative affect M=13.6±3.8), Fagerstrom Test for Tobacco Dependence (M=4.6±2.1), and the Cognitive Deficit subscale of the Functional Assessment of Cancer Therapy Cognitive scale (M=58.6±8.8). The latter questionnaire measures mental acuity, attention/concentration, memory, and verbal fluency. Multivariate logistic regression analysis was used to predict biochemically confirmed abstinence at 12 weeks (CO ≤ 10ppm; 47/117 were abstinent). Predictor variables included negative and positive affect, tobacco dependence, and perceived cognitive impairment. Medication adherence (>80% of pills taken), gender, and race were covariates. Results revealed a significant effect of perceived cognitive functioning (Wald chi-square=4.2, p=0.04) and a borderline effect of tobacco dependence (Wald chi-square=3.5, p=0.06), such that greater perceived cognitive functioning and lower tobacco dependence predicted abstinence. Medication adherence was also significant (Wald chi-square=23.6, p<0.001). Results suggest that perceived cognitive impairment may be a critical driver of smoking persistence among cancer patients and other clinical populations that experience cognitive problems. Discussion will consider theoretical accounts of how cognitive impairment promotes relapse among smokers with cancer, and consider implications for laboratory studies exploring the psychological mechanisms that maintain smoking behavior.

**SYM16B DISTINGUISHING INTENTIONAL AND AUTOMATIC THEORIES OF AFFECTIVE CONTROL OVER TOBACCO-SEEKING BEHAVIOR IN YOUNG ADULTS**

Lee Hogarth, PhD*, University of Exeter

Two theoretical accounts seek to explain how negative mood primes smoking behavior. The stimulus-response (S-R) account claims that experience of the greater reinforcement value of smoking in the negative mood state strengthens the direct association between negative mood and smoking behavior, enabling negative mood to prime smoking behavior automatically. By contrast, the incentive learning account argues experience of the greater reinforcement value of smoking in the negative mood state enables the negative mood state to retrieve an expectation that smoking will be more reinforcing, that is, evoke smoking desire, which interacts with instrumental knowledge of the response required to produce that outcome in the current context to prime smoking behavior. The current study tested the differential prediction of these two accounts, that is, whether negative mood induction would prime a novel tobacco-seeking response in an extinction test where direct experience of the tobacco outcome is precluded. Overnight deprived daily-smokers (n=44) first learned two instrumental responses, one for tobacco and one chocolate points. Half of participants received negative mood induction whereas the control group received positive mood induction before choice between the two instrumental responses was measured in an extinction test. The results showed that participants in the negative induction group who showed a significant increase in negative mood increased their tobacco choice in the extinction test compared to all other participants (p=0.003). This finding cannot be explained by the S-R account because the extinction test precludes direct experience of the greater reinforcement value of the tobacco outcome in the negative mood state, thus any S-R association controlling the tobacco-seeking response could not be strengthened to augment this response at test. By contrast, the finding supports the incentive learning account wherein negative mood raises the expected value of tobacco which interacted with instrumental knowledge of the response-tobacco association to augment that choice in the extinction test. Implications of the incentive learning account for treatment are discussed.

**SYM16C ROLE OF DISTRESS INTOLERANCE ON MOTIVATION TO QUIT AND SMOKING LAPSE BEHAVIOR IN ADULT DAILY SMOKERS**

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Distress intolerance (DI), the inability to tolerate negative physical and emotional states, is a key barrier to smoking cessation. Although DI is shown to predict lapse among smokers trying to quit, few studies have examined the potential impact of DI on motivation to undergo a quit attempt. In this laboratory-based study, we examined correlations between multiple indices of DI, motivation to quit, and smoking lapse. We expected that higher DI would be associated with (1) lower motivation to quit and (2) shorter latency to smoke. Participants were 86 daily smokers (37% female) with mean age of 43.3±13.3 years old who smoked 18.7±8.8 cigarettes per day. Distress intolerance indices included self-report (Intolerance for Smoking Abstinence Discomfort Questionnaire [IDQ-S]) and behavioral persistence measures (mirror-tracing, serial addition, card, mirror, and breath-holding tasks). Motivation to quit was assessed with a readiness ladder. Latency to smoke (range 0-50 minutes) was assessed when delaying smoking was monetarily rewarded. Consistent with past research, correlations between DI indices were low (rs = -0.20 to -0.32), suggesting measures assessed distinct facets of DI. Motivation to quit was associated with IDQ-S lack of cognitive coping subscale (r=-.25, p<0.02) and marginally associated with mirror-tracing task duration (r=.21, p=.056). After adjusting for FTND score and sex, Cox proportional hazards analyses revealed that only cold pressor task duration marginally predicted latency to smoke (HR=0.99; 95% CI 0.98-1.00; p=0.054). As nearly 70% of participants delayed smoking all 50 minutes, we secondarily assessed smoking choice at the conclusion of the task. Those who chose to smoke in the lab (n=55) vs. declined (n=31) had shorter duration on both cold pressor (29 vs. 49 sec., t=3.12, p<.001) and mirror tracing.
tasks (6.5 vs. 8.1 min; t=2.18; p<0.02). In conclusion, we found partial support for elevated DI among smokers unmotivated to quit, as well as initial associations between DI and tobacco choice following a lapse analog task. Findings provide needed information on levels of DI across the continuum of motivation to quit and impact of DI on smoking lapse.

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SYM16D
YOUNG ADULT DAILY SMOKERS’ AFFECTIVE AND URGE RESPONSES TO PASSIVE EXPOSURE TO SECOND-GENERATION E-CIGARETTE USE

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Electronic cigarette (e-cigarette) use has increased substantially with second-generation “vape pen” devices forecasted to overtake use and sales of first generation cigalikes. While observation of regular cigarette smoking and cigalike vaping evoke smoking urge and desire, it is unknown whether observing use of vape pens, with lower resemblance to traditional cigarettes, would also generalize as a conditioned cue. In this laboratory investigation, we compared the effects of direct observation of vape pen e-cigarette use (eGo3®) vs. combustible smoking (Camel Blue®; Newport®). Participants were 56 daily smokers (38% female; age 27.9±4.5 SD years; smoke 9.8±4.4 cigs/day). They conversed for two 5-minute periods with a study confederate who drank bottled water in their presence as the first cue (control), and then used either a vape pen (n=27) or smoked a cigarette (n=31) as the second active cue. Main dependent variables were scores on the Diener Positive & Negative Affect Scale, the Brief Questionnaire of Smoking Urges (B-QSU), and visual analogue scale (VAS) desire ratings. Results showed a main effect of time (p<.001) with no effects of the control cue (observing water drinking) on mood and smoking urge or desire, but significant effects of both active cues (vape pen and regular smoking) decreasing positive affect and increasing negative affect and smoking urge and desire. Further, observing vape pen use also increased e-cigarette desire (p<.001) but this was not the case for observing regular smoking. After the cue portion, latency to smoke (vs. small monetary rewards for not smoking) was measured with results showing similar time to initiate smoking in those who previously observed vape pen vs. cigarette use (21.2 vs. 26.9 min; t=0.48, p=.64). In sum, this socio-behavioral laboratory model included aspects of real-life exposures, i.e., talking with someone engaging in product use, while controlling for other cues that confound assessments. We conclude that passive exposure to second generation e-cigarette use generalizes as a conditioned cue to elicit smoking urges and behavior as well as affective changes in young adult smokers.

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SYM17
HOW SHOULD WE TAX ELECTRONIC NICOTINE DELIVERY SYSTEMS—ANALYZING CURRENT EVIDENCE TO INFORM FUTURE POLICY

Ann Boonn, MPH, Campaign for Tobacco-Free Kids; Frank J. Chaloupka, PhD University of Illinois at Chicago; Michael Amato, PhD, ClearWay Minnesota

The market for electronic nicotine delivery systems (ENDS) has experienced rapid growth. Some business analysts predict ENDS could surpass the market for combustible cigarettes. While ENDS are substantially less harmful to individuals than combustible tobacco, the rapid growth of ENDS has occurred without deep knowledge of their patterns of use at the population level. ENDS use patterns in relation to initiation, dual use and cessation of combustible tobacco could result in net benefit or net harm to the population as a whole. Regulatory and other policy strategies should be designed to maximize the benefits and minimize the harms of ENDS. A central issue is how ENDS should be taxed, however scant evidence currently exists to inform decision making. In October 2012, Minnesota included ENDS as a product derived from tobacco in the state tobacco product tax. To date this is the only meaningful state tax applied to ENDS in the U.S. In contrast to the position adopted by Minnesota, several researchers have proposed a risk adjusted tax that would tax combustible products proportionately higher than non-combusted products that present a lower risk to the user. As other states and localities move to tax ENDS, a discussion of differential taxation proportionate to the relative harms of different products is a timely topic. This symposium will examine the question of ENDS taxation with presentations of original data and a broad discussion of the topic. Raymond Boyle will chair the session. Ann Boon from the Campaign for Tobacco-Free Kids will provide a general overview of the current status of ENDS taxation at the local and state level. Frank Chaloupka will present analyses of national data exploring ENDS own-price elasticity and cross-price elasticities. Michael Amato will present data from Minnesota by examining sales of ENDS before and after an increase in both cigarette and ENDS taxes. David Abrams will serve as the symposium discussant of the presentations, and will facilitate a broader discussion with the presenters and audience on the merits of ENDS taxation from a population perspective, based on the FDA’s mandate to use a public health standard.

Justification: This symposium will present compelling evidence to inform state level consideration of e-cigarette taxation.

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SYM17A
PRICES AND THE DEMAND FOR ELECTRONIC NICOTINE DELIVERY SYSTEMS

Frank Chaloupka, PhD*, Jidong Huang, PhD, Sherry Emery, PhD, University of Illinois at Chicago

BACKGROUND: Sales and use of electronic nicotine delivery systems (ENDS) have increased rapidly in the U.S. over the past several years. Concerns about the rise in use, particularly among youth, have led many state and local governments to consider taxing these products, although few have actually implemented taxes to date. How and at what level these products should be taxed is the subject of considerable debate, with some advocating taxes equivalent to cigarette taxes and others suggesting little or no tax. METHODS: Data from two national samples are used to estimate the price elasticity of demand for ENDS. First, we use quarterly, market-level scanner data on ENDS sales volume and value from 52 U.S. markets to estimate the impact of ENDS prices on sales, as well as to estimate the impact of cigarette prices on ENDS sales. We then match these ENDS prices to data from nationally representative online survey on ENDS use conducted in 2013 in order to assess the impact of ENDS prices and cigarette prices on ever and current use of ENDS. RESULTS: We find consistent evidence that increases in ENDS prices significantly reduce ENDS sales, with estimated own-price elasticities based on market-level data ranging from -0.97 to -1.19. In contrast, we find mixed evidence concerning the impact of cigarette prices on ENDS sales. In the individual-level analysis, we find that higher disposable ENDS prices are associated with significantly lower odds of ever use (elasticities ranging from -0.81 to -0.98), but do not find a statistically significant association between disposable prices and current use. No significant associations were found between rechargeable ENDS prices or cigarette prices and ever or current ENDS use. DISCUSSION: ENDS prices have a significant impact on sales and use of these products, implying that levying sizable taxes on ENDS would lead to sharp reductions in their use, while at the same time generate new tax revenues for state and local governments. The net public health impact of ENDS taxes, however, remains unclear and will depend on how these taxes are implemented in combination with other tobacco product taxes.

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SYM17B
OVERVIEW OF STATE AND LOCAL TAXATION OF ENDS

Ann Boonn, MPH*, Nichole Veatch, Campaign for Tobacco-Free Kids

Most states have implemented laws to prohibit the sale of ENDS to minors, and an increasing number of states and localities are including these products in their smoke-free laws. However, few states and localities have acted to tax ENDS. Cur-
of e-cigarette use, drilling down beneath the typical reports of past-30-day use to document different populations of e-cigarette users based on frequency and amount of e-cigarette use, which in turn differ in demographics and in smoking patterns. Geoffrey Curtin presents US national data on the relationship between e-cigarette use and smoking, showing that greater frequency and amount of e-cigarette use is associated with increased likelihood of having abstained from smoking, and that 93% of adult e-cigarette users were established smokers at the time they adopted e-cigarettes. Ray Niaura presents data from a large US smoking cessation study, comparing outcomes among those who did and did not adopt e-cigarettes for smoking cessation. The analysis makes an important methodological point, showing that the initial association with treatment failure is artifactual, and due to characteristics of smokers who choose to use e-cigarettes. Finally, Ken Warner, as discussant, will provide perspective on the data presented, and their implications for public health, policy, and tobacco and nicotine regulation. Time is provided for audience discussion. The symposium thus provides recent data on current patterns of adult e-cigarette use, touching on multiple uses in multiple populations to inform consideration of the role of e-cigarettes in population nicotine and tobacco use.

Justification: The data presented in this symposium inform public health, regulatory, and policy considerations regarding e-cigarettes, by describing adult use of e-cigarettes by levels of use, smoking behaviors, purposes of use (e.g., cessation), and regulatory frameworks.

Funding: 1. Data collection and analyses for this project were supported by a grant from the U.S. National Cancer Institute — P01 CA138389, R01 CA100362, Canadian Institutes of Health Research – 115016, Cancer Research UK – C312/A11943, National Health and Medical Research Council of Australia – 450110/APP100592. 2. This work was supported by RAI Services Company. 3. This work was supported by RAI Services Company. 4. Supported by funding from the National Cancer Institute of the National Institutes of Health (#5R01CA155489-03; P30CA051008) and the National Institute on Drug Abuse of the National Institutes of Health (#K10DA037950-01).

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SYM18A RISK PERCEPTIONS AND USAGE OF ELECTRONIC CIGARETTES BY ADULT SMOKERS IN DIFFERENT REGULATORY ENVIRONMENTS: AN INTERNATIONAL PERSPECTIVE

K. Michael Cummings, PhD, MPH1, Shannon Gravely, PhD2, Hua Yong, PhD3, Sara Hitchman, MA4, Stuart R. Boffing, MD5, Ron Borland6, Geoffrey Fong, PhD7, Dave Hammond, PhD7, Richard O'Connor, PhD7, Maciej Gorniwtz, PhD7, PharrmD7, 1Medical University of South Carolina, 2University of Waterloo, 3Cancer Council Victoria, 4King’s College London, 5Roswell Park Cancer Institute

OBJECTIVE: This presentation will present our most recent data from the International Tobacco Control (ITC) Policy Evaluation Project on risk perceptions, trial, and use of ECs from countries with no or few restrictions on the sale and marketing of ECs (i.e., United Kingdom (UK), Netherlands, United States (US), and Malaysia) and countries with stricter regulations (i.e., Canada, Australia (AU), Brazil, Mexico and Uruguay). METHODS: Since 2009, the ITC surveys have included a number of questions about ECs. EC awareness and trial among those aware were assessed using the questions “Have you ever heard of electronic cigarettes or e-cigarettes?” “Have you ever tried an electronic cigarette?” Those who had tried were asked “How often, if at all, do you currently use an electronic cigarette?” with the response options “Daily, Less than daily, Less than weekly, Less than monthly or Not at all”. All participants aware of ECs were asked whether or not they thought ECs were more, less or equally harmful as regular cigarettes to one’s health, with “Don’t Know” as an acceptable response option. RESULTS: Prevalence estimates of trial and current use of ECs has increased dramatically between survey waves in all countries. However, the estimates of ever-use are still lower in countries with strict regulation such as Australia (AU) (2.2% in 2010 to 25.1% in 2016) compared to countries with less rigorous EC regulations (i.e., UK 0.6% in 2010 to 14.4% in 2014). More smokers in the US (11%, 2014-15) and UK (14%, 2013) used an EC only for their last quit attempt compared to Canada (4%, 2014) and Australia (2%, 2013) (P<0.001). More UK smokers than AU smokers (58.5% versus 35.2%) believe that ECs are a lot less harmful than conventional cigarettes, but more in AU than the UK responded “Don’t Know” when asked about EC relative harmfulness (36.5% versus 17.1%). CONCLUSIONS: The regulatory environment does appear to influence smokers’ estimates of the trial of ECs as well as perceptions about the
relative harms of ECs compared to conventional cigarettes, which in turn is related to the use of ECs.

Funding: Data collection and analyses for this project were supported by a grant from the U.S. National Cancer Institute – PO1 CA138389, RO1 CA100362, Canadian Institutes of Health Research – 115016, Cancer Research UK – C312/A11943, National Health and Medical Research Council of Australia – 455110/APP100592. Financial Disclosure: Dr. Cummings has served as a paid expert witness representing plaintiffs in litigation against cigarette manufacturers. He also has a grant from Pfizer supporting a hospital based tobacco cessation program.

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SYM18B
PAST-30-DAY E-CIGARETTE “USERS” ARE HETEROGENEOUS: VARIATION IN INTENSITY OF USE, SMOKING HISTORY, AND DEMOGRAPHICS

Saul Shiffman, PhD*1,2, Geoffrey Curtin, PhD3, Mark Sembower, MS1, Mimi Kim, PhD1, PinneyAssociates, Inc, 1The University of Pittsburgh, 2RAI Services Company

Many analyses of e-cigarette use have relied on any use in the past 30 days to define “e-cigarette users.” This definition ignores substantial variations in e-cigarette use, creating a misleading picture of e-cigarette users. This analysis uses data from a national US sample of 54,105 adults, including 5,104 e-cigarette users, from online research panels and surveyed during 2013-2014, to define and describe levels of e-cigarette use based on frequency (days/month) and amount (uses/day). Among those reporting past-30-day e-cigarette use, 10% used on only 1 day and another 18% used less than weekly (2-4 days), while 22% used daily or nearly daily (≥27 days). Amount of use also varied substantially: the median was one use per day; over 75% reported ≤5 uses per day. Individual characteristics varied substantially among classes of past-30-day users: for example, those who used daily were older than non-diary users (43 years versus 38; this and all other comparisons cited, p<0.05). Of past-30-day e-cigarette users, 10% had been established smokers (100+ cigarettes); among daily e-cigarette users, this figure was ≥95%. These data document large variations in the frequency and amount of e-cigarette use, associated with different subject characteristics, within the past-30-day-user group, suggesting that a more discriminating and detailed characterization of “users” will be necessary to track and understand e-cigarette use.

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SYM18C
ASSOCIATIONS BETWEEN E-CIGARETTE USE AND SMOKING (CURRENT AND FORMER) AMONG US ADULTS

Geoffrey Curtin, PhD*1, Saul Shiffman, PhD2, Mark Sembower, MS1, Mimi Kim, PhD1, RAI Services Company, 1PinneyAssociates, Inc., 1The University of Pittsburgh

Limited data are available to characterize e-cigarette users’ concurrent smoking behaviors or smoking histories, including the order in which they initiate regular e-cigarette use and smoking, respectively. These analyses examine e-cigarette use and smoking in a national US sample of 54,105 adults (5,104 e-cigarette users and 17,446 current or former smokers), surveyed during 2013-2014. Estimates from this repeated cross-sectional survey indicate that 9% of respondents report any past-30-day e-cigarette use, with two-thirds having started regular use within the past year. In terms of product order, 7% of past-month e-cigarette users report initiating regular use prior to regular smoking, with 93% having initiated regular smoking first. Past-month e-cigarette users who initiated regular use prior to regular smoking were younger (29 vs. 40 years; all effects reported are significant at p<0.0001); more likely to be minorities (OR=2.6); and used e-cigarettes fewer days per month (9 vs. 13) and fewer times per day (2.9 vs. 6.1) than those who initiated regular smoking first. Also, past-month e-cigarette users who initiated regular cigarette use first were less likely to be current smokers (OR=0.08) and, among current smokers, were less likely to be daily (OR=0.10) or heavy smokers (OR=0.04). While cross-sectional data can only suggest potential associations between current e-cigarette use and smoking, these data indicate that the proportion of past-month e-cigarette users who were former smokers (established but not past-month smokers) increased systematically with increasing e-cigarette use (days/month and uses/day). For example, daily e-cigarette users reporting 10+ uses/day were more likely to be former smokers (OR=9.2) than those using e-cigarettes less than daily. These data provide initial evidence regarding associations between e-cigarette use and smoking among US adults, both demonstrating diverse subgroups and patterns of e-cigarette use and suggesting that e-cigarette use has not yet stabilized in individuals or in the population. Evidence of additional associations will require continued and more discriminating surveillance of e-cigarette use.

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SYM18D
E-CIGARETTES AND SMOKING CESSATION: MISINTERPRETING RESULTS OF OBSERVATIONAL STUDIES CAN LEAD TO MISLEADING CONCLUSIONS

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Controversy surrounds claims about electronic nicotine delivery systems (ENDS) efficacy as a smoking cessation aid. Two streams of evidence appear to collide: (1) Randomized clinical trial (RCT) results, which are scarce, suggest some positive (and certainly no negative) effects; (2) Observational study results, with a few exceptions, appear to show that use of ENDS is associated with poorer outcomes. We found that existing observational studies (N=35) suffer from various fundamental design flaws that preclude sound inference. Most were cross-sectional; most measured “treatment” (i.e., use of ENDS) at a single time point that could reflect only transient use (e.g., past 30 day use); most did not assess reasons for ENDS use especially for purposes of quitting smoking; and all did not adequately take into account the influence of confounding variables. To illustrate the last point, we present a secondary data analysis from a web-based smoking cessation trial (N=2,123). ENDS use during treatment was negatively associated with abstinence, but the association was reduced to zero and was no longer significant after appropriate adjustment (via entropy balancing) for baseline characteristics and use of other cessation aids. This suggests that factors other than use of ENDS were responsible for worse outcomes. As is the case for “population” studies of nicotine replacement treatments, most ENDS observational studies are poorly equipped to address ENDS cessation efficacy questions, especially in terms of measurement of ENDS use for cessation and other factors that distinguish ENDS from non-ENDS users. RCTs offer the best opportunity for unbiased estimates of ENDS efficacy. We will discuss minimum requirements for design and analysis of observational studies if they are to yield reasonable causal treatment effect estimates.

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SYM19 DEVELOPMENT AND EVALUATION OF DIGITAL HEALTH MOBILE APPS FOR SMOKING CESSATION: STATE OF THE ART AND FUTURE DIRECTIONS

Reuven Dar, PhD, Tel Aviv University; Lorien A Abroms, ScD, George Washington University; Jonathan B Bricker, PhD, Fred Hutchinson Cancer Research Center

Recent years have witnessed a revolution in the number and sophistication of smartphone apps aimed at delivering smoking cessation interventions. The symposium will describe the development and evaluation of three interventions for smoking cessation using digital health mobile apps. The first speaker in the symposium will be Dr. Lorien Abroms from George Washington University. She will present findings related to SmokefreeMOM (SFM), the National Cancer Institute’s text messaging program that provides encouragement, advice, and tips to help pregnant women quit smoking. Dr. Abroms will present data on program adherence as well as short-term results of a pilot randomized trial within health systems. She will discuss the challenges involved in identifying ways of engaging smokers in a program setting and in evaluating the effects of such programs on cessation. The second speaker, Dr. Jonathan Bricker from Fred Hutchinson Cancer Research Center, will present data on the receptivity and cessation outcomes for a smoking cessation app that follows the principles of Acceptance & Commitment Therapy (ACT). The results from this trial in a population of primarily low SES female smokers showed that ACT was well-received and was associated with promising quit rates. Dr. Bricker will discuss methods which might increase program completion and potentially lead to higher quit rates. Finally, Dr. Reuven Dar from Tel Aviv University will describe SmokeBeat, a new smoking cessation app designed for use with smartwatches and wristbands. SmokeBeat is powered by a software platform that processes information from the sensors embedded in wearables. It can identify in real time the hand-to-mouth gestures that characterize smoking a cigarette and distinguish them from similar gestures (e.g., eating, drinking, shaving). The backend platform generates data analytics on a vast number of smoking parameters and distills them both general and personal smoking behavior. The follow-up data retention rate at the 2-month follow-up was 85%. Regarding receptivity, 85% of participants were satisfied with the app, 73% would recommend it to a friend, 82% found ACT exercises useful, and 93% reported the app was easy to use. Overall, the quit rates at the 2-month follow-up were 21% for 7-day point prevalence and 11% for 30-day point prevalence. Among program completers (per-protocol), the quit rates at 2-month follow-up were 33% for 7-day point prevalence and 28% for 30-day point prevalence. CONCLUSION: This trial of a smartphone app showed that ACT is well-received and shows promising quit rates among the challenging population of primarily low SES female smokers. Methods to increase participants' completion of the app would likely further increase quit rates. A fully-powered efficacy trial is the natural next step in the testing of this promising new smartphone app.

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SYM19A HELPING PREGNANT WOMEN QUIT SMOKING WITH TEXT MESSAGING: USER ENGAGEMENT AND SHORT-TERM OUTCOMES IN A TRIAL OF NCI’S SMOKEFREEMOM

Lorien Abroms, ScD*; Leah Leavitt; Jennifer Schindler-Ruwisch, MPH; Margaret Montgomery, RN; Laura Marcherelli, ERIK Augustsson, PhD; George Washington University, Washington Hospital Center, National Cancer Institute

Text messaging offers a novel platform to reach pregnant women and help them quit smoking. Although research studies have found mHealth interventions to be effective for smoking cessation in general adult smokers, few studies have been conducted on pregnant smokers. SmokefreeMOM (SFM) is the National Cancer Institute’s text messaging program that provides encouragement, advice, and tips to help pregnant women quit smoking. The messages are automated and timed around a woman’s quit date and baby’s due date, with a frequency of 2-5 messages a day in the active part of the program. SFM launched in May 2014 and 515 people subscribed on Smokefree.gov between May 2014 and February 2015. Results will be presented both from program accrual data (SFM-Program) and from a pilot randomized trial within health systems (SFM-RCT). The majority of subscribers in SFM-Program reported smoking every day or almost every day (81.75%) and the mean number of cigarettes smoked per day was 11.27 (SD 7.47). Based on computer records of program use (n=515), 69 (13.40%) unsubscribed within 24 hours, 143 (27.77%) within the first week, 88 (17.09%) between 1 week and 30 days, and 284 (54.87%) remained in the program for 30 days or more. Of users who stayed in the program longer than 1 week (n=372; 71.96%), 81.18% used at least one keyword and on average participants used 8.01 keywords. At 7 days after the quit day, 57 (15%) of people responded to a smoking status question, with 33 (8.87%) reporting that they had not smoked over the past week. Unlike SFM-Program, participants in the intervention group of SFM-RCT did not experience high unsubscribe rates. Results from the RCT pilot (n=80) indicate that at 1-month follow up, quit rates are similar in both groups, though with a positive trend favoring the intervention group. Future studies are needed to identify ways of engaging smokers in a program setting and that evaluate the effects of these programs on cessation.

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SYM19B TRIAL OF AN ACCEPTANCE & COMMITMENT THERAPY SMARTPHONE APPLICATION FOR SMOKING CESSATION AMONG PRIMARILY LOW SES FEMALE SMOKERS

Jonathan Bricker, PhD*; Wade Copeland, MS; Jaimee Heffner, PhD; Fred Hutchinson Cancer Research Center, University of Washington, Seattle, Washington

The majority of low SES female smokers showed that ACT was well-received and was associated with promising quit rates. Dr. Bricker will discuss methods which might increase program completion and potentially lead to higher quit rates. Finally, Dr. Reuven Dar from Tel Aviv University will describe SmokeBeat, a new smoking cessation app designed for use with smartwatches and wristbands. SmokeBeat is powered by a software platform that processes information from the sensors embedded in wearables. It can identify in real time the hand-to-mouth gestures that characterize smoking a cigarette and distinguish them from similar gestures (e.g., eating, drinking, shaving). The backend platform generates data analytics on a vast number of smoking parameters and distills them both general and personal smoking behavior. The follow-up data retention rate at the 2-month follow-up was 85%. Regarding receptivity, 85% of participants were satisfied with the app, 73% would recommend it to a friend, 82% found ACT exercises useful, and 93% reported the app was easy to use. Overall, the quit rates at the 2-month follow-up were 21% for 7-day point prevalence and 11% for 30-day point prevalence. Among program completers (per-protocol), the quit rates at 2-month follow-up were 33% for 7-day point prevalence and 28% for 30-day point prevalence. CONCLUSION: This trial of a smartphone app showed that ACT is well-received and shows promising quit rates among the challenging population of primarily low SES female smokers. Methods to increase participants’ completion of the app would likely further increase quit rates. A fully-powered efficacy trial is the natural next step in the testing of this promising new smartphone app.

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SYM19C SMOKEBEAT: A NOVEL SMOKING CESSATION APP UTILIZING BIG DATA OVER WEARABLES

Reuven Dar, PhD*, Tel Aviv University

SmokeBeat is a novel app designed for use with smartwatches and wristbands for delivering cognitive-behavioral treatment (CBT) for smoking cessation. SmokeBeat is powered by the Somatix data analytics software platform, which processes information from the sensors embedded in wearables. SmokeBeat relies on an original algorithm to identify in real time, accurately and reliably the hand-to-mouth movements being performed by the wearable user signify smoking. This unique ability of SmokeBeat to identify smoking can be used to generate data analytics on a vast number of smoking parameters and to distill from these data both general and personal smoking patterns. Analysis of data from thousands of smoked cigarettes shows that SmokeBeat’s accuracy in detecting a single puff is 73%, bringing the cumulative probability of correctly detecting a full cigarette to practically 100%. SmokeBeat has important advantages over existing apps for smoking cessation. Firstly, thanks to its ability to detect smoking in real time, it does not depend on users...
registering every smoking event, as do all other current apps. This unique feature enables SmokeBeat to increase smokers' awareness and counter the tendency of the smoking habit to become automatic and "mindless." Secondly, by analyzing individual smoking patterns over time, SmokeBeat can predict when smoking is likely to take place and alert the smoker, as well as suggest means to halt or shorten the duration of the next cigarette. The smoking patterns of individual users are identified by running machine-learning algorithms on the data collected, which include information on location context, social setting, temporal patterns, etc. Illustrations of the rich data generated by the Somatix platform in a large pilot study of SmokeBeat will be presented.

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PODIUM PRESENTATION 1: FLAVORED NON-CIGARETTE TOBACCO PRODUCTS

PA1-1
PROCESS EVALUATION OF THE NEW YORK CITY ORDINANCE RESTRICTING SALES OF FLAVORED NON-CIGARETTE TOBACCO PRODUCTS: HISTORICAL AND LEGAL PERSPECTIVES

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BACKGROUND: Public health practitioners are exploring local policy approaches to regulate the sale of flavored tobacco products that may appeal to youth. These efforts would benefit from review of the experiences of jurisdictions with such policies. Our systematic process evaluation of the New York City (NYC) restriction on flavored tobacco products explores the degree to which it was implemented as intended, identifies operational barriers that were encountered, and describes the process of tobacco industry litigation. METHODS: We conducted a national scan that identified fewer than 10 jurisdictions with flavored tobacco product sales restrictions in place and focused our review on New York City’s ordinance. We reviewed the published and gray literature, conducted key stakeholder interviews, and studied administrative and legal documents to prepare a comprehensive assessment of the NYC policy, which we report from historical and legal perspectives. RESULTS: The NYC flavored tobacco product restriction was passed in October 2009, shortly after the federal Family Smoking Prevention and Tobacco Control Act (TCA) was signed into law, prohibiting flavored cigarettes and preserving state and local authority to adopt restrictions on the sale or distribution of tobacco products. The New York City flavored tobacco product ordinance was adopted after a decade of advocacy and education efforts by local tobacco control advocates. Although the policy was challenged in court based on preemption by the TCA, the court decided in favor of NYC and policy implementation was delayed by the rulemaking process, not by the litigation. Following enactment of the ordinance, NYC informed tobacco retailers about the law and worked deliberately to develop, review, and publish rules regarding enforcement, which began in November 2010. Barriers to implementation included tobacco industry counter-efforts and challenges defining concept flavors (e.g., purple) in addition to characterizing flavors (e.g., grape). CONCLUSIONS: Our findings suggest that the policy was implemented largely as intended and that legal challenges did not delay implementation.

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PA1-2
RETAILER COMPLIANCE WITH THE 2009 NEW YORK CITY ORDINANCE RESTRICTING SALES OF FLAVORED NON-CIGARETTE TOBACCO PRODUCTS

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BACKGROUND: Flavored non-cigarette tobacco sales restrictions are being pursued as viable policy options for states and localities. It is important to evaluate the outcomes and impact of these policies. We evaluated local policy compliance with the New York City (NYC) ordinance restricting retailers from selling flavored non-cigarette tobacco products. METHODS: We analyzed enforcement agency inspection and store violation records compiled over 4-plus years following implementation of the 2009 NYC ordinance in November 2010. Additionally, in March–April 2015, we deployed a mobile crowdsourcing technology to conduct in-store observations and detect products restricted by the NYC ordinance in 100 stores randomly sampled from each of four zones: interior NYC; within-NYC border areas (inside NYC within ½ mile of city boundary); non-NYC border comparison area. RESULTS: The NYC enforcement agency inspections have detected an ordinance violation. The monthly violation rate was highest in November 2010, declined steeply in the following months, and remained stable thereafter. In-store observations detected restricted products in 37.2% of NYC stores, higher than the enforcement agency violation rate, but significantly lower than observed in the upstate comparison area where 85.1% of stores sold flavored non-cigarette tobacco products (p < 0.0001). Flavored tobacco product availability did not differ significantly among stores in the two NYC-area zones, or in the non-NYC border comparison zone, which was not subject to the ordinance. CONCLUSIONS: The NYC ordinance reduced availability of restricted tobacco products, and the policy may have had an unintended, favorable impact on retailers in border areas outside of NYC. Our findings suggest that careful implementation and multiple layers of enforcement do not ensure compliance with the policy.

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PA1-3
ASSESSING EFFECTS OF THE NEW YORK CITY FLAVORED TOBACCO PRODUCT SALES BAN ON ADOLESCENTS

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BACKGROUND: Flavored tobacco products are associated with youth smoking, initiation, and experimentation. Flavored agents conceal the harsh taste of tobacco and create a product that is more appealing to new users, such as adolescents. In October 2009, New York City prohibited the sales of flavored cigars, cigarettes, little cigars, chew, snuff, snus, tobacco, pipe tobacco, roll-your-own tobacco, and dissolvables, excluding menthol, and enforcement began in November 2010. METHODS: We evaluated this ban on sales of flavored tobacco products using New York City Youth Risk Behavior Survey data from 2010 and 2013. We used logistic regression to separately assess changes in adolescent experimentation with flavored tobacco products, use of any tobacco products, and current smoking before and after the ban, adjusting for socio-demographics. RESULTS: The adjusted model assessing ever use of flavored tobacco products found 37% lower odds of ever trying flavored tobacco products among adolescents in 2013 compared with those in 2010 (Odds Ratio (OR): 0.63 (0.52, 0.77)). The adjusted tobacco product use model found 28% lower odds of ever using tobacco products among adolescents in 2013 compared with 2010 (OR: 0.72 (0.62, 0.85)). The adjusted current smoking model found no significant difference in the odds of smoking cigarettes ever (OR: 1.31 (0.94, 1.84)). CONCLUSIONS: The odds of ever using flavored tobacco products and use of any tobacco products declined between 2010 and 2013 among New York City adolescents, while odds of current cigarette smoking did not change after the ban. These results demonstrate that the sales ban on flavored tobacco products was successful in contributing to declines in adolescent experimentation, initiation, and use over time.

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PA1-4
EVALUATING IMPLEMENTATION OF CHICAGO’S CITY ORDINANCE RESTRICTING SALES OF FLAVORED TOBACCO PRODUCTS NEAR SCHOOLS
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BACKGROUND: Flavored tobacco products have been repeatedly shown to appeal to youth and are likely to encourage children to initiate and continue to use these products. While the Family Smoking and Prevention Tobacco Control Act authorized a ban on flavored cigarettes, with the exception of menthol, in September, 2009, other flavored tobacco products, such as e-cigarettes, are not regulated, and are in large part, flavored. We examined the implementation of the City of Chicago ordinance to restrict sales of flavored tobacco products and e-cigarettes within 1,000 feet of K-12 schools.

METHODS: This study used a standardized observational survey of all retail outlets within 500 feet of any primary or secondary school. A sample of 200 stores was randomized to three strata: 1) a census of stores located within 500 feet of schools (intervention); 2) a sample of stores located within 501-1,000 ft of affected schools (control 1); and 3) a sample of stores located greater than 1,000 feet from affected schools (control 2). We found availability of flavored products in 96%, 99.6%, and 86% of stores in strata 1, 2, and 3, respectively. The most common flavored-non-cigarette products observed were e-cigarettes (93%), followed by liquid nicotine (26%), and sweet-flavored (32%) e-cigarettes. The prevalence of flavored e-cigarettes was similar across strata 2 and 3. Trends in availability of flavored products, overall and within strata, and the prevalence of initial voluntary compliance with the ban by retailers will be presented, as well as analysis of differences among store types (e.g., convenience and grocery stores).

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PA1-5
APPEAL OF SWEET FLAVORED ELECTRONIC CIGARETTES AMONG YOUNG ADULTS: IMPLICATIONS FOR ABUSE POTENTIAL AND HARM REDUCTION
Nicholas Goldenson*, Matthew Kirkpatrick, Jessica Barrington-Trimmis, Raina Pang, Julia McBeth, Mary Ann Pentz, Jonathan Samet, Adam Leventhal, University of Southern California, CA, USA

BACKGROUND: Use of sweet-flavored electronic cigarettes (e-cigarettes) is popular among young adults. E-cigarette product characteristics that enhance appeal could promote uptake among cigarette smokers in search of safer nicotine alternatives and increase initiation and possible abuse among recreational users. We examine the effects of sweet (vs. non-sweet and flavorless) e-cigarette solutions on self-reported measures of appeal using an abuse potential lab methodology. METHODS: Twenty current e-cigarette users (11 M, 9 F; 26.3±4.6 age; 80% current smokers) attended one laboratory session during which they self-administered standardized puffs of 20 different e-cigarette solutions (6 sweet, 3 non-sweet, 1 flavorless) with nicotine (6 mg/mL solution) and without nicotine (0 mg/mL solution) using a standardized device. Following each trial, participants completed subjective ratings of appeal (e.g., liking, desire to use again, amount of money they would pay for a day’s worth of the solution) and perceived sweetness. RESULTS: Sweet flavorings produced greater ratings of “liking” than non-sweet (p<.001) and flavorless (p<.001) solutions. “Desire to use again” was higher for sweet than non-sweet (p<.001) and flavorless (p<.001) solutions. Participants reported they would pay an average of $1.11 (95% CI=$0.54-$1.67) and $1.98 (95% CI=$1.12-$2.85) more money for a day’s worth of the sweet-flavored than the non-sweet and flavorless e-cigarette solutions, respectively. Ratings of sweetness were positively associated with ratings of liking (beta=0.49; p<.001), desire to use the e-liquid again (beta=0.44; p<.001) and the amount of money participants were willing to pay for the solution (beta=0.35; p<.001). Flavored effects on outcomes were similar for nicotine and placebo solutions. DISCUSSION: Compared to non-sweet and flavor- less e-cigarette solutions, sweet-flavored solutions were rated as more appealing, independent of nicotine. These data provide some of the first experimental evidence that sweet flavorings in e-cigarettes may enhance product appeal, which could have important implications for smokers seeking harm reduction tools and abuse potential in recreational users.

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PA1-6
CIGAR USE, SENSATION SEEKING TENDENCIES, AND FLAVORS
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Sensation seeking tendencies are associated with a variety of tobacco product use including cigarettes, cigars, and smokeless tobacco. To date little is known about specific attributes of the product that appeal to sensation seekers or whether such attributes appeal equally to men and women. Here we examine the relationship between flavored cigar use and sensation seeking tendencies, by gender. Participants were 5,482 18-29 year old students (M age=20.49; SD=2.36; 64% female; 36% non-Hispanic white, 31% Hispanic, 19% Asian, 9% African American/ black and 5% other) attending one of 24 colleges in Texas. Students completed an online tobacco survey, which included images of products to facilitate recognition. Student’s t-tests, conducted by gender, were completed to examine mean differences in sensation seeking tendencies by initial and current use of flavors, among ever cigar users. Overall, 37% of the sample used a cigar product in their lifetime and just under 10% were current users. Among women, sensation seeking tendencies were not associated with either first or current use of flavored cigars. Among women who ever used a cigar (n=1,049), the majority (89%) reported that their first experience was with a flavored product. Similarly, among current female cigar smokers (n=204), the majority (87%) reported using flavored cigars. Among men, higher sensation seeking tendencies were associated with flavored use when first trying cigars and current cigar use (p

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PODIUM PRESENTATION 1: ADVANTAGES AND CHALLENGES OF SMOKING CESSATION

PA2-1 WITHDRAWAL EXPOSURE THERAPY FOR SMOKING CESSATION: A PILOT TRIAL

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INTRODUCTION: Considerable evidence suggests that withdrawal processes form a key motivational basis for cigarette use and play a critical role in relapse to smoking. Smoking cessation treatments, however, appear to exert only modest effects on withdrawal. One treatment option for further reducing withdrawal severity would be to provide smokers with practice in withdrawal regulation strategies. The objective of the current study, therefore, was to pilot a withdrawal exposure intervention for smoking cessation. METHODS: Adult smokers (N = 60) of at least 10 cigarettes per day were randomized to one of two conditions: Withdrawal Exposure Therapy (WT), which included the development and application of withdrawal regulation strategies over four separate sessions that spanned the first four hours of abstinence; or Relaxation Training (RT), which controlled for the therapeutic contact of the WT condition. All sessions occurred prior to the quit date, after which differential treatment was discontinued, and all participants received brief cognitive-behavioral counseling, nicotine replacement therapy, and self-help literature. Biochemically-confirmed (CO < 4) seven-day point-prevalence abstinence was assessed at 2 and 3 months after end-of-treatment. RESULTS: Both treatment retention and credibility ratings were high and equivalent across conditions. 0% and 4.2% of participants in the RT condition were abstinent at Months 2 and 3, while 22.2% of participants in the WT condition were abstinent at both time points (Month 3 OR = 6.57 [7.59-50.19]). In-session withdrawal ratings suggested that WT improved the regulation of withdrawal symptoms, which were in turn associated with treatment outcomes. CONCLUSION: Withdrawal exposure therapy appears to be a feasible and potentially efficacious intervention for smoking cessation, and consistent with treatment rationale, there was evidence that its effects on abstinence were mediated by enhanced withdrawal regulation. Both the need to replicate these results and strategies for integrating withdrawal exposure into more comprehensive smoking cessation treatment will be discussed.

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PA2-2 A RANDOMIZED CONTROLLED TRIAL OF MOTIVATIONAL AND REDUCTION INTERVENTIONS FOR SMOKERS WHO ARE NOT READY TO QUIT

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Most smokers are not ready to quit in the near future. Reduction in cigarettes per day (CPD) aided by medication increases quit attempts (QA) and cessation for smokers who were not ready to quit. Though about half of smokers are reluctant to use nicotine medications for a non-cessation reason, there is insufficient evidence to determine whether reduction without medication is effective. Also, the USPHS recommends a brief motivational treatment (5Rs) for smokers who are not ready to quit. Only two prior tests of the 5Rs have been published: Both found that it increases QA and cessation. The present RCT tests whether a brief 1) reduction based intervention without medication or 2) motivational intervention based on the 5Rs increases the likelihood of making a quit attempt or becoming abstinent compared to usual care. 560 adult smokers of ≥10 CPD who were planning to quit at some point but not in the next 30 days were randomized to receive one of three brief telephone based interventions: 1) reduce CPD, 2) increase motivation using the 5Rs, or 3) brief advice to quit (usual care). No medication was provided. All participants completed measures of intention to quit, CPD, QA and point prevalence abstinence at 6 monthly follow-ups. Preliminary analyses found that, as hypothesized, participants who received the motivational intervention reported greater increases in intention to quit (standardized beta=.14, p<.05) and those who received the reduction intervention reported greater reductions in CPD (standardized beta=.17, p<.05) than those who received usual care. Despite this, neither motivational nor reduction based interventions increased the likelihood of making a QA. However, the motivational intervention increased PP abstinence at 6 months more than usual care (11% vs 5% OR=2.17; p<.05) but reduction intervention did not. Preliminary conclusions are that a brief motivational intervention without medication is effective, but a reduction intervention without medication is not effective for smokers who are not ready to quit. Analyses to examine why the motivational intervention increased quit success but not quit attempts in comparison to usual care are ongoing.

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PA2-3 THE REAL WORLD EFFECTIVENESS OF NICOTINE PATCH: EXPERIMENTAL EVIDENCE FOR AND AGAINST NRT

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Although many clinical trials have shown that nicotine replacement therapy (NRT) is an effective treatment for smoking cessation, questions continue to arise as to whether NRT is effective in a real-world application. A large study from England, for example, showed that sending vouchers to quitline callers to obtain free NRT was not associated with a higher quit rate, even though many in the intervention group redeemed their vouchers and were thus more likely to have used NRT than the control group. The present study examined the hypothesis that the real-world effect of NRT is dependent on its ability to stimulate quit attempts. The study re-recruited 3,706 smokers from a large state quitline. Subjects were randomized into one of 6 cells in a 3 x 2 (patch x counseling) design. The 3 levels of patch were: Usual Care (U), Voucher for Patch (V), and Patches Directly Mailed from the quitline (P). The 2 levels of counseling were: materials-only and telephone counseling. Smokers in Group P received 2-weeks of patches express mailed directly from the quitline. Smokers in Group V received a voucher containing a toll-free number. If smokers called that number, they would also receive 2-weeks of patches express mailed directly to them. Smokers in Group U had to obtain patches on their own. Participants were followed for 7 months. The rates of smokers’ using the nicotine patch were 76.0%, 52.5%, and 17.9%, for Group P, V, and U, respectively. The 6-month prolongation abstinence rates were 9.5%, 7.2%, and 5.8%, for Groups P, V, and U, respectively. Group P was significantly higher than both V and U, but the difference between V and U was not significant. Counseling was also effective. Two results from this study are worth highlighting: First, this is the first RCT to show that even two-weeks of patches can help smokers quit smoking. Second, it replicates the English study finding that vouchers are not an effective system to promote in the clinical setting.

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PA2-4 UNASSISTED QUITTING AND SMOKING CESSATION METHODS USED IN THE US IN THE PERIOD 2007-2011

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In this study we estimated prevalence of unassisted quitting (i.e., quitting without medical aids or other interventions), and medical and non-medical smoking cessation aids used to quit smoking. We also assessed smoking-related behaviors and factors associated with using medical methods and quitting unassisted during the successful quit attempt. The data correspond to long-term and recent quitters, who responded to the 2010-2011 Tobacco Use Supplement to the Current Pop-
ulation Survey and quit smoking within the last three years prior to the survey. We estimated that about 72% of quitters quit unassisted, 26% used at least one medical method, and 7% used at least one non-medical method during their last quit attempt. Among quitters who used non-medical methods, about a half also tried quitting “cold turkey”. For successful quitters, cutting back on cigarettes gradually and relying on social support were more commonly associated with medical cessation, while giving up “cold turkey”—with unassisted cessation. The study showed that attempts may try different ways of quitting during the same quit attempt. Unassisted quitting remains the predominant means of recent and long-term smoking cessation in the US.

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PA2-5

EFFECT OF “CUT DOWN TO QUIT” ON SMOKING CESSATION: A RANDOMIZED CONTROLLED TRIAL

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BACKGROUND AND OBJECTIVES: Smoking reduction was found not be inferior to abrupt cessation on quitting in smokers with motivation to quit. This study tested a brief smoking reduction intervention without pharmacotherapy to assist on smoking abstinence in Hong Kong "Quit to Win" smoking participants in 2014. METHODS: This parallel open-labeled cluster randomized controlled trial (NCT02188433) recruited community adult daily smokers (N=1077) and randomly allocated to “Cut down to quit” (CDTQ) (n=559) or “Quit immediately” (QI) (n=518) group. Randomization was based on recruitment session according to pre-defined random sequences. Smokers in CDTQ group received brief advices on reducing daily cigarette consumption and a self-help card on smoking reduction strategies and coping with craving. The QI group received a brief advice on abrupt quit and a 12-page conventional self-help booklet on smoking cessation. Telephone follow-ups at 1 week, 1, 2, 3 & 6 months were conducted by assessors who were blinded to group allocation. Primary outcome was self-reported 7-day point prevalence quit rates at 3 and 6 months. Self-reported abstinence at 6 months was biochemically validated using exhaled carbon monoxide (<4ppm) and salivary cotinine (<10ng/ml). Intention to treat principle was used. FINDINGS: About 63% and 61% of smokers were followed at 3 and 6-month, respectively. Quit rates at 3-month were similar between CDTQ (7.0%) and QI (10.0%) (odds ratio [OR] =0.67, 95% CI 0.44-1.04.). The corresponding quit rates at 6-month were 9.1% and 10.6% (OR =0.85, 95% CI 0.57-1.26). Both groups had similar validated quit rates (CDTQ 5.4%, QI 5.6%; OR =0.98, 95% CI 0.57-1.62). Smokers in CDTQ (20.9%) were more likely to reduce 50% or more cigarette consumption than QI smokers (14.5%) at 6-month (p<0.01). CONCLUSION: The brief smoking reduction intervention achieved similar quit rates to the conventional quitting advice in adult smokers in Hong Kong. Smoking reduction strategy might have helped some smokers to quit particularly those unwilling to quit abruptly.

Funding: Hong Kong Council on Smoking and Health

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PA2-6

EFFECTIVENESS OF USING THE SAME VERSUS DIFFERENT SMOKING CESSATION MEDICATION FOLLOWING RELAPSE: FINDINGS FROM THE INTERNATIONAL TOBACCO CONTROL (ITC) FOUR COUNTRY SURVEY

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INTRODUCTION: Nicotine dependence is a chronic disorder typically characterized by multiple failed quit attempts (QAs), yet little is known about the sequence of quit methods used across multiple QAs or how this may impact future success. Evidence from treatment recycling studies among smokers who initially tried, and failed with a smoking cessation medication (SCM) is mixed with regard to efficacy of using the same vs. different SCM. This study examines the naturalistic prevalence and effectiveness of variability in SCM use over multiple QAs. METHODS: Participants (N=795; 62% female; M age=47 years) are from a prospective cohort study of adult smokers in the UK, US, Canada, and Australia. Inclusion criteria for the current analysis: 1) completed 2+ consecutive annual surveys (2006-2011), 2) initiated a QA at least one month before each survey, and 3) provided data for the primary predictor (SCM use during most recent QA), outcome (1-month point prevalence abstinence), and relevant covariates. GEE analyses were conducted on 1057 QA pairs. RESULTS: Five SCM user classifications were identified for the QA pairs: 1) non-users of SCM (43.5%), 2) early users (11.4%; SCM on first QA), 3) late users (18.4%; SCM on last QA), 4) repeaters (10.7%; same SCM on both QAs), and 5) switchers (14.2%; different SCMs on each QA). The highest abstinence rates were for switchers (29%). Switchers were not statistically different from late users (20%; OR =1.6, p=0.08), but were twice as likely to quit relative to non-users (16%; OR=2.1, p=0.002) and early users (18 %; OR=2.0, p=0.03), and attained nearly three times greater quit success than repeaters (12%; OR=2.8, p=0.004). Switcher status was predicted by higher nicotine dependence (OR=1.3, p<0.001) and living in the US compared to UK (OR=2.0, p=0.02). CONCLUSIONS: Most QAs occur unassisted, but a considerable portion is aided by evidence-based SCMs. Our findings suggest smokers will be more successful quitting if they try a different SCM upon making subsequent QAs. The finding that even the most dependent smoker can increase their odds of quitting by switching SCMs is a message that should be conveyed to smokers.

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PA2-7

ATTEMPTING TO ENHANCE THE SCALABILITY OF A PROVEN POST-DISCHARGE INTERVENTION FOR HOSPITALIZED SMOKERS: THE HELPING HAND 2 RANDOMIZED TRIAL

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BACKGROUND: Hospital admission presents smokers with an opportunity to quit tobacco. Starting treatment in hospital is effective if it continues after discharge but few hospitals do this. We proved the efficacy of a post-discharge Extended Care (EC) intervention in a 1-site RCT (JAMA 2014;312:719). EC used interactive voice response (IVR) phone calls to remind smokers to quit and offer counseling and med support provided by hospital staff. To improve program scalability, we
adapted the model so that IVR calls linked to a quitline, not to hospital staff, for post-discharge treatment. METHODS: A 3-site RCT compared EC vs. standard care (SC) in smokers counseled in the hospital who planned to quit at discharge. EC provided free FDA-approved meds and 5 IVR calls for 3 mo. Smokers requesting support or med refill were transferred directly from IVR to the quitline during a call. SC patients received a med recommendation and quitline referral. Outcomes were assessed 1, 3, and 6 mo post-discharge. RESULTS: 1,357 smokers admitted 12/2012–7/2014 were randomly assigned to EC (n=680) or SC (n=677). Groups were comparable at baseline (51% male, 73% white, mean age=50y; mean cig/ 

PA2-8

USING EMPLOYMENT INFRASTRUCTURE TO RECRUIT FOR STATEWIDE CESSATION PROGRAMS: REFERRALS, ENROLLMENTS, AND OUTCOMES

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To sustainably increase enrollments in cessation services the CDC recommends systems change within organizations serving tobacco users. Efforts within health-related agencies are common; however, less attention has been paid to non-medical recruitment sources. In 2015, the state of Florida institutionalized a fax referral process within CareerSource Florida (CS), which provides employment and other services to more than one million unemployed Floridians per year. To-bacco users are identified and referred to quitline, website, and in-person cessation services. This abstract describes referrals and enrollments to the CS program to quitline and website services, compared to non-CS enrollees and enrollments from physician fax referrals (PR) and EHR referrals from county health department clinics. CS enrollees will be compared to PR enrollees and non-CS enrollees on program use and 30-day point prevalence abstinence, collected seven months post-enrollment. From January – June 2015, CS referred 2,398 tobacco users to the quitline or website, of whom 26.2% enrolled (n=627, compared to 29,319 non-CS enrollees). The PR program, the most relevant comparison for this measure, resulted in 1,788 referrals and a 32.2% conversion rate (n=575). EHR resulted in 861 enrollments. Compared to each of the three comparison groups, CS enrollees were significantly more likely to be African American. They were significantly younger and more likely to be uninsured than non-CS and PR enrollees, and had lower education levels than all non-CS enrollees. In contrast, EHR enrollees were significantly younger, Hispanic, and uninsured; and had lower education levels than CS enrollees. Full results on program use and quit rates will be presented. In sum, CS resulted in more referrals than the PR program, adding more than 2% of enrollees to the quitline and website. Its conversion rate falls within a typical range of 20%-50%. CS serves unemployed tobacco users who smoke at higher rates than those employed, and reaches several important demographic groups. Early evidence suggests CS is a model non-medical referral source.

Funding: Florida Department of Health

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PA3-1

HAS NICOTINE DEPENDENCE INCREASED AMONG SMOKERS? A NEW TEST OF THE HARDENING HYPOTHESIS

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OBJECTIVES: The Hardening Hypothesis posits that one reason for the stagnation in smoking decline in recent years is due to increased failure among current smokers to remain abstinent after a quit attempt due to an increasing prevalence of nicotine dependence (ND) among smokers in the US. This study tested that idea using clinical and demographic factors that account for both and not just one of these factors. Given the high rate of smoking in the US, these studies have a large impact on public health policy and smoking cessation efforts. METHODS: Data were obtained from the National Health Interview Surveys (NHIS) conducted from 1980 to 2011. We assessed smoking status, smoking behavior, demographics, and smoking cessation efforts among smokers from different levels of smoking (dail-y, non-daily) annually from 2003 to 2013. Linear time trend analyses were then adjusted for age, gender, income, education and number of cigarettes smoked per day (CPD). RESULTS: Unadjusted estimates suggest that the prevalence of ND has declined among daily smokers and has remained stable among non-daily smokers from 2003 to 2013. After adjusting for demographics and number of cigarettes smoked per day, however, results reverse direction and suggest that the prevalence of ND has increased significantly from 2003 to 2013 among both daily and non-daily smokers in the US. Stratified analyses, adjusted for demographics and cigarettes/day, suggest these increases have been concentrated among demographic subgroups of the population among whom declines in smoking have been most prominent (e.g., males, those with higher income and higher education levels). DISCUSSION: This study provides new information supporting the hardening hypothesis with empirical, population-based data, using a novel approach in examining the prevalence of ND among smokers from 2003-2013 while accounting for the changes in demographics and smoking behavior (including CPD) that have occurred among smokers in the US simultaneously during this time period. This is an advance over prior studies, many of which either conflated these two constructs as both reflecting ND and/or did not account for both in the same investigation. Results have significant implications for tobacco control and treatment at both the clinical and community-level. Today's smokers appear to have high levels of ND; significantly higher levels of ND than those of prior years. Therefore, in order for tobacco control efforts to make further progress in bringing the stagnated prevalence lower, treatment of ND, in addition to smoking cessation, needs to be made widely available in order to move the prevalence lower.

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PA3-2

DUAL USE AND QUITTING BEHAVIOR AMONG USERS OF TRADITIONAL CIGARETTES

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INTRODUCTION: A growing class of tobacco products, referred to as other tobacco products (OTP), has increased in popularity even as popularity of conven-tional cigarettes has waned. Whether OTPs can help smokers quit or cut down the number of cigarettes they consume is controversial. We explore longitudinal
data from two waves of a nationally representative survey, to determine the relationships between dual usage of cigarettes and OTPs and quitting behavior. METHOD: The first wave of a national online survey (N=17522) of tobacco use and media consumption was conducted in February-March 2013. Tobacco users were oversampled to ensure sufficient sample size. A second wave is in the field in August-September 2015 using the same sampling design, with an estimated N of 15,000 of whom 50% are expected to be retaining participants. Appropriate survey and longitudinal weights are used in analyses. Generalized linear mixed models with survey weights will be performed to determine longitudinal relationships between dual usage and quitting after controlling for demographic variables. RESULTS: Results from Wave 1 indicate that among cigarette smokers, e-cigarette dual users are more likely to have intention to quit and have attempted to quit. The odds of having quit intention for e-cigarette users are greater than twice the odds for cigarette-only users. However, dual usage is not significantly associated with lower daily consumption of cigarettes in regression models. The dual user group who uses both cigars and LCCs consume 1.84 (0.54-3.14) more cigarettes per day on average compared to those who smoke cigarettes only. Longitudinal analyses will explore successful quitting of combustible cigarettes among dual users, as well as changes in current daily consumption. DISCUSSION: Previous findings will explore successful quitting of combustible cigarettes among dual users, as well as changes in current daily consumption. DISCUSSION: Previous findings suggest that dual users may be diversifying tobacco product consumption rather than actually moving toward quitting, although their initial intentions may have been different. We are updating our results with Wave 2 data to report if previous findings hold over time and the extent to which those who previously reported dual use with intention to quit have succeeded at quitting.

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PA3-3
MODELING THE IMPACT OF TOBACCO CONTROL POLICIES ON CIGARETTE AND SMOKELESS TOBACCO USE

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After a period of steady decline, smokeless tobacco use has increased in many states. Like e-cigarettes, smokeless tobacco can act as a substitute for smoking and thereby reduce harm, or smokeless tobacco can be used with cigarettes and delay smoking cessation or act as a gateway to smoking cigarettes. Compared to e-cigarettes, smokeless tobacco use has a relatively long history. The presentation will make use of the SimSmoke tobacco control policy simulation model, which has been validated for more than 20 countries and 10 states. Models previously developed for Kentucky and Minnesota have been extended to consider smokeless tobacco use, including sole and dual use. In particular, the models distinguish policies directed at smoking and those directed at smokeless tobacco use and how those policies affect the use of these two products. The models have been validated by gender and age groups over the time period 1993 through 2015. As states with very different tobacco control histories, the models for Minnesota and Kentucky show very different patterns of smokeless tobacco and cigarette use over time, and show how levels of exclusive and dual smokeless use depend on the measure of use adopted. The models are also used to show how patterns of use directly reflect tobacco control policies, particularly those directed at cigarette use. In particular, the implementation of a strong smoke-free air law in Minnesota is shown to be directly related to an almost immediate increase in smokeless tobacco use among young working adults. With poytobacco use on the rise, the results from both the Minnesota and Kentucky models show the need for continued strong tobacco control policies directed at cigarette use, as well as policies that affect the use of other alternative nicotine delivery products.

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PA3-4
A RANDOMIZED EXPERIMENT ON RAISING THE MINIMUM AGE OF TOBACCO SALES: POLICY SUPPORT AND THE ROLE OF TRUST IN GOVERNMENT, 2014-2015, USA

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INTRODUCTION: The Institute of Medicine has called for an increase in the minimum age of sale for tobacco products. Although studies indicate public support for a higher minimum age, it is not clear what age increase would garner the greatest public support. Moreover, previous studies have not assessed whether perceptions of trust in the U.S. government may predict policy support. METHODS: The data for these analyses are from a nationally-representative sample of U.S. adults (N=5014), of which 4,880 provided responses to the age policy support outcome measure. Administered in both English and Spanish, the survey sample included non-overlapping landline and cell-phone random digit dial sampling frames that oversampled low income and high tobacco use regions. The weighted response rate was 42%, which is comparable to larger national tobacco use surveys. In addition to determining whether support varied by the proposed minimum age of tobacco sales (ie, random assignment to the 19, 20, or 21 age minimum condition), we also assessed whether smoking status, individual demographics, state-level characteristics, and general trust in the government predicted policy change support. A standard three-step sample weighting procedure was followed to produce the sampling weights used in our analyses. RESULTS: Odds of support for raising the minimum purchase age to 21 was greater than support for an increase to 20 or 19 (OR: 2.6, 95%CI: 1.8-3.8). There was majority support for raising the age of purchase for cigarettes in all regions of the US (66.3%, 95%CI: 64.0-68.6). Participants who had greater trust in the government were more likely to endorse raising the minimum age of purchase, as were individuals older than 21, nonsmokers, females, and racial/ethnic minorities. CONCLUSIONS: The majority of Americans support raising the minimum age for the purchase of tobacco products. Notably, trust in government emerged as an important predictor of policy support. To garner maximal support for raising the age of tobacco purchase, relevant federal agencies should consider working to bolster their credibility and trustworthiness as effective regulators of tobacco products.

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PA3-5
MENTHOL CIGARETTE SALES IN CANADA - KEY TRENDS

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INTRODUCTION: In the 2000s, small flavoured cigars, similar in size to cigarettes, became increasingly popular among Canadian youth. In 2009, the Parliament of Canada amended the Tobacco Act to prohibit the use of flavours and other additives in cigarettes, little cigars and blunt wraps. The objective of the prohibition was to reduce the attractiveness of these products. Menthol, however, was not included in the amendment, and menthol cigarettes remained available for sale in Canada after 2009. This presentation examines key trends in menthol cigarette sales in Canada since 2001, with a specific emphasis on trends after the 2009 amendment to the Tobacco Act. BACKGROUND: Between 2001 and 2008, the Canadian cigar market sawaconfectionery-flavoured products drove a 300% increase in cigar sales. The 2009 amendment to the Tobacco Act had a significant impact on sales of cigars in Canada. Cigar sales declined by 30% in the two years following the amendment. In contrast to the cigar market, the market for menthol cigarettes had been shrinking in Canada. Prior to the adoption of the amendment, Health Canada officials stated publicly that among the reasons for the menthol exemption was that menthol cigarette sales had fallen by more than 25% since 2001. OBJECTIVES: 1) Review aggregate data on menthol cigarette sales in Canada to determine if the downward trend in menthol consumption observed by Health Canada in 2008 continued after the 2009 amendment to the Tobacco Act. 2) Review brand specific data on menthol cigarette sales to identify recent product trends. METHODOLOGY: Canada’s Tobacco Reporting Regulations require tobacco manufacturers and importers to report information on their products, including brand-level sales vol-
BACKGROUND: Some scholars suggest that price differences between combustible cigarettes and e-cigarettes could be effective in moving current combustible smokers to e-cigarettes, which could reduce tobacco-related death and disease. Currently, in most jurisdictions e-cigarettes are not subject to the same excise taxes as combustible cigarettes, potentially providing the category with a price advantage over combustible cigarettes. We use empirical price data to determine if e-cigarettes’ tax advantage has translated into a price advantage.

METHODS: Using Euromonitor International data from a sample of 45 countries in 2014, the price of combustible cigarettes, disposable e-cigarettes, and rechargeable cigarettes were converted to USD dollars and compared using two-tailed mean comparison tests and two-tailed paired t-tests. We standardized prices to a comparable, equivalent unit volume between products and considered the cost of purchasing a rechargeable e-cigarette in addition to the cost of e-liquid when calculating the total cost of switching between smoking and vaping.

RESULTS: Comparable units of combustible cigarettes cost less than disposable e-cigarettes in almost every country in the sample (n=34, mean of $5.26 v. $8.56, p<0.001). While the e-liquids consumed in rechargeable e-cigarettes might cost less per comparable unit than combustible cigarettes (n=45, mean of $2.84 v. $5.06, p<0.001), the initial cost to purchase a rechargeable e-cigarette (n=28, mean of $23.70) presents a significant cost barrier to switching from smoking to vaping.

DISCUSSION: Generally, prices of e-cigarettes are much higher than combustible cigarettes. If policymakers wish to tax e-cigarettes less than combustibles, forceful policy action – almost certainly through effective excise taxation – must raise the price of combustible cigarettes beyond the price of using e-cigarettes.

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PA3-6
COMBUSTIBLE CIGARETTES COST LESS TO USE THAN E-CIGARETTES: GLOBAL EVIDENCE AND TAX POLICY

IMPLICATIONS

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BACKGROUND: Some scholars suggest that price differences between combustible cigarettes and e-cigarettes could be effective in moving current combustible smokers to e-cigarettes, which could reduce tobacco-related death and disease. Currently, in most jurisdictions e-cigarettes are not subject to the same excise taxes as combustible cigarettes, potentially providing the category with a price advantage over combustible cigarettes. We use empirical price data to determine if e-cigarettes’ tax advantage has translated into a price advantage. METHODS: Using Euromonitor International data from a sample of 45 countries in 2014, the price of combustible cigarettes, disposable e-cigarettes, and rechargeable cigarettes were converted to USD dollars and compared using two-tailed mean comparison tests and two-tailed paired t-tests. We standardized prices to a comparable, equivalent unit volume between products and considered the cost of purchasing a rechargeable e-cigarette in addition to the cost of e-liquid when calculating the total cost of switching between smoking and vaping. RESULTS: Comparable units of combustible cigarettes cost less than disposable e-cigarettes in almost every country in the sample (n=34, mean of $5.26 v. $8.56, p<0.001). While the e-liquids consumed in rechargeable e-cigarettes might cost less per comparable unit than combustible cigarettes (n=45, mean of $2.84 v. $5.06, p<0.001), the initial cost to purchase a rechargeable e-cigarette (n=28, mean of $23.70) presents a significant cost barrier to switching from smoking to vaping. DISCUSSION: Generally, prices of e-cigarettes are much higher than combustible cigarettes. If policymakers wish to tax e-cigarettes less than combustibles, forceful policy action – almost certainly through effective excise taxation – must raise the price of combustible cigarettes beyond the price of using e-cigarettes.
**PODIUM PRESENTATION 1: SMOKING IN LOW-INCOME POPULATIONS**

**PA4-1**

**EFFECTS OF NEGATIVE INCOME SHOCK ON CIGARETTE DEMAND AND CRAVING**

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We recently demonstrated that a hypothetical scenario describing an acute, negative income shock (assumed to be true) increased rate of delay discounting compared to neutral and positive income shock scenarios. This effect may be an adaptive response to income depletion, as it enables individuals to continue to meet their minimum needs (food, clothing, shelter). Alternatively, economic scarcity may increase delay discounting via stress induction and corresponding changes in mood and executive function. Both hypotheses generate similar predicted effects on delay discounting. However, these hypotheses generate opposite predictions regarding the effects of negative income shocks on demand for cigarettes (i.e., an adaptive reduction in drug demand in response to income depletion or a maladaptive increase in demand in response to stress induction). Cigarette smokers (N = 108) on Amazon Mechanical Turk were exposed to both negative and neutral scenarios (order randomized) and subsequently completed cigarette purchase and delay discounting tasks, as well as affect and cigarette craving scales. Similar to our previous findings, scarcity increased delay discounting—a large effect (d = 0.86), which was relatively consistent across participants. In turn, scarcity reduced cigarette demand (i.e., “essential value”, or 1/α); however, this effect was small (d = 0.35) and highly heterogeneous, as a substantial proportion of participants showed maladaptive scarcity-induced increases in cigarette demand (approximately 35%). Scarcity also increased negative affect and craving. Significant predictors of the direction of the scarcity-induced change in cigarette demand included the concomitant scarcity-induced change in discounting (r = -0.37), baseline discount rate under the neutral condition (r = 0.29), indices of cigarette dependence (r = -0.25 to -0.32), and age (r = -0.21). Importantly, neither scarcity-induced changes in negative affect nor cigarette craving predicted the scarcity-induced changes in demand, suggesting the net scarcity-related reduction in cigarette demand was not mediated by alteration of stress or mood states. These negative affect and craving measures were, however, correlated with change in cigarette consumption when cigarettes were free (r = .24 and .22, respectively). The present data suggest that acute poverty produces a net reduction in cigarette demand, although the direction of this effect in individual subjects depends on a number of variables.

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**PA4-2**

**TWELVE MONTH OUTCOMES OF A COMMUNITY HEALTH ADVOCATE-LED SMOKING CESSATION INTERVENTION IN PUBLIC HOUSING**

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**BACKGROUND:** We conducted a cluster randomized trial among Boston public housing residents, a group that is low-income, ethnically diverse, and which has high smoking rates. We hypothesized that an intervention based on multiple visits with motivational interviewing (MI) delivered by a tobacco treatment advocate (TTA-MI) would be associated with higher rates of smoking cessation vs. a single non-MI session delivered by a TTA (TTA-SC). TTAs were residents of public housing. We have previously reported on follow-up at 3 months; here, we report on smoking status at 12 months. **METHODS:** 330 participants were randomized to the TTA-MI or TTA-SC arms. Participants had one visit with a TTA who discussed strategies for quitting and information on treatment programs. TTA-MI participants were eligible for up to 9 visits over 6 months with the TTA; sessions focused on initiating and maintaining cessation treatment. Primary outcomes at 12 months were biochemically-verified 7-day and 30-day point prevalent abstinence (PPA). We conducted intent-to-treat and as-treated analyses using logistic GEE models to account for the cluster randomization by public housing site. **RESULTS:** Participants followed-up at 12-months (n=253) were mostly female (72.7%) and Black (59.7%). Quit rates were 16.1% for 7-day PPA and 14.5% for 30-day PPA in the TTA-MI group and 10.1% for 7-day PPA and 7.6% for 30-day PPA in TTA-SC group. After adjustment, the TTA-MI group was significantly more likely to achieve 7-day (OR=3.01, 95%CI: 2.20–4.11) and 30-day PPA (OR=3.77, 95%CI: 2.72–5.21) than the TTA-SC group. When stratified by number of sessions, quit rates among TTA-MI participants remained significantly higher. TTA-MI participants were also more likely to use the Smokers’ Quitline or a local clinic-based program to help them quit (OR=1.90, 95%CI: 0.96 – 3.77). CONCLUSION: The TTA-MI intervention was associated with higher quit rates among this low-income ethnically-diverse population. The study provides evidence that lay providers from the target community can be trained to deliver effective MI interventions for smoking cessation.

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**PA4-3**

**COORDINATED CARE FOR SMOKING CESSATION IN LOW INCOME VETERANS: THE CONNECT TO QUIT (CTQ) TRIAL**

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**BACKGROUND:** Low income veterans who smoke face unique challenges in quitting. We hypothesized that proactively treating smoking by coordinating care between low income veterans and their primary care providers (PCPs) could improve cessation rates. **METHODS:** This cluster-randomized trial compared coordinated care (CTQ) with usual care (UC) among PCPs at 3 VA outpatient clinics. Eligible patients of enrolled PCPs reported income < $36K and > 1 cigarette per day (cpd) but did not have to be ready to quit. Over 2 years, coaches contacted CTQ veterans to coordinate referrals for behavior therapy and smoking cessation medication with PCPs. Medication costs were reimbursed. The primary outcome, biochemically-validated (end-expired CO <10 ppm) 30-day abstinence at 24 months (mo), was assessed by multivariable logistic regression, adjusted for age, gender, race/ethnicity, FTND, recent quit attempt. Secondary outcomes (medication use, cpd) were assessed at 6, 12, 18, 24 mo and modelled via mixed effects logistic regression. **RESULTS:** 45 PCPs were randomized to CTQ (n=23) or UC (n=22); 633 veterans were enrolled into their PCP’s arm (CTQ=314, UC=319). Groups were comparable at baseline (mean age 55±10 years, 90% male, 51% white, mean FTND 4.5±2.2, 48% with mental comorbidity). Half of participants reported annual income <$12K. Follow up rates at 6, 12, 18, and 24 mo were 84%, 81%, 80%, and 73%, respectively. Compared with UC, CTQ was not associated with higher biochemically validated smoking cessation at 24 mo ([6.1% vs. 7.5%; adjusted odds ratio [AOR] 1.06; 95% confidence interval [CI] 0.61-1.82; p=NS], but CTQ was associated with greater use of medication at 6, 12, 18, 24 mo (50-76% CTQ vs. 28-46% UC; AOR 3.42; 95% CI 2.42-4.81)) and > 50% reduction in cpd at 6, 12, 18, 24 mo (47-52% CTQ vs. 32-45% UC; AOR:1.69; 95% CI 1.18-2.43, p<.01). **CONCLUSION:** In the context of a robust usual care in the VA and a highly disadvantaged ethnically-diverse population. The study provides evidence that lay providers from the target community can be trained to deliver effective MI interventions for smoking cessation.

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PA4-4  SHOULD WE RELY ON SELF-REPORTED SMOKING ABSTINENCE? RESULTS FROM A RANDOMIZED CLINICAL TRIAL TARGETING LOW-SOCIOECONOMIC STATUS SMOKERS.

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BACKGROUND: The need for biochemical verification in smoking cessation studies has been questioned. This study examined the acceptability and feasibility of biochemical verification of self-reported smoking abstinence in a clinical trial that sampled Australian low-socioeconomic status smokers. METHOD: Participants were asked to provide a urine or saliva sample if they had met the following Russell Standard criteria at their final 8-month post-baseline interview: self-reported quit for six months, with no more than five cigarettes smoked in that period, and no cigarettes smoked in the past week. They were deemed abstinent if they returned a negative biochemical result (cotinine <115nmol/L). Participants claiming self-reported prolonged cessation were asked to attend either a collection centre or to have a trained nurse collect urine/saliva samples from their home. Participants who reimbursed $40 for test completion. RESULTS: Of the 135 participants who self-reported prolonged abstinence, 56.0% returned a positive cotinine result. This means that of the 135 participants who self-reported prolonged abstinence, only 26.7% were confirmed to be abstinent. The remainder either failed to provide the sample, or returned a positive sample. CONCLUSION: Biochemical verification is a challenging undertaking but necessary to address high misclassification rates. It is paramount an acceptable protocol is set-up with adequate infrastructure provided for the monitoring and collection of samples. Biochemical verification is definitely still required to validate abstinence in clinical smoking cessation trials.

PA4-5  PREDICTORS OF ADHERENCE TO NICOTINE REPLACEMENT THERAPY (NRT; NICOTINE PATCH) IN A RANDOMIZED CONTROLLED TRIAL IN A HOMELESS POPULATION

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BACKGROUND: Adherence to smoking cessation treatment is generally low especially among socio-economically disadvantaged groups including the homeless and patients with mental illnesses. Despite the high smoking rates among homeless smokers (~70%), to date, no study has systematically examined predictors of adherence to NRT among this population. The aim of this study was to identify the predictors of adherence to NRT in the first NIH-funded smoking cessation trial conducted among homeless smokers. DESIGN: Secondary analysis of a 2-arm randomized controlled trial (RCT). Participants were randomized to one of the two study conditions: Motivational Interviewing (MI; 8 weeks of NRT + 8 sessions of MI) or Standard Care (NRT + brief advice). Primary outcome for current analysis is adherence to NRT defined as a total score of zero in the Morisky adherence scale at end of NRT treatment (8 weeks). Demographic, and baseline psychosocial, tobacco-related, substance abuse measures were compared between those who did and did not adhere to NRT using Chi-square and Fisher Exact tests. Multivariate logistic regression that included treatment assignment was conducted among variables with p≤0.10 in the univariate analyses. All statistical analyses were performed using SAS 9.3 and p-values of <0.05 were considered statistically significant. RESULTS: Study sample consisted of 430 persons who were homeless and current cigarette smokers. Participants were predominantly Black (56.3%), male (74.7%), had mean age of 44.4 years (SD = 9.9), majority were unemployed (90.5%), and completed at least high school education or equivalent (76.7%). After adjusting for potential confounds, smokers who were depressed at baseline were less likely to be adherent to NRT (p=0.01). In addition, younger age of smoking initiation, greater confidence to quit, and motivation to adhere were positively associated with adherence in the homeless population. Furthermore, smoking cessation programs conducted in this population should address depression and the motivation to quit which may increase adherence to NRT, increase quitting smoking and ultimately reduce smoking-related co-morbidities.

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PA4-6  MINIMISING PARTICIPANT ATTRITION AND MAXIMISING TREATMENT ADHERENCE: INSIGHTS FROM A RANDOMIZED CLINICAL TRIAL OF AUSTRALIAN LOW-SOCIO-ECONOMIC SMOKERS.

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BACKGROUND: Recruitment, treatment adherence and retention is difficult to achieve in clinical trials, particularly for low socio-economic status (low-SES) populations. The validity and integrity of studies can be compromised by loss of contact and poor treatment adherence. The aim of this study was to provide practical insights on maximizing retention and treatment adherence in a randomized control trial (RCT) that aimed to reduce smoking rates among Australian low-SES smokers (n = 1047). METHOD: Two-group parallel block randomized open-label RCT conducted by telephone. Low-SES smokers were recruited through advertisements placed in newspapers and government social assistance agencies, and referral from Quitline support services. Participants in the control group received 8-weeks free supply of combination nicotine replacement therapy (NRT) plus four check-in calls (in addition to Quitline support). The intervention group received matched support as the control group plus four telephone-based financial education and support sessions. Participant data was collected via telephone interview at baseline, and at 2- and 8-months post-baseline. Strategies to minimize attrition and maximise treatment adherence included: providing multiple contact details, providing contact details of a secondary contact, sending reminder letters, emails and text messages, reimbursement ($40) for each interview, and making multiple contact attempts to complete each session/interview. RESULTS: 90% of the sample were retained at 2-month follow-up and 84% at final 8-month follow-up. The average number of support calls completed was 3.03 in the intervention group and 3.55 in the control group, with an average of 16.36 calls made to each participant in the intervention (5.40 per completed session) and 11.52 calls made to each control participant (3.25 calls per completed session). CONCLUSION: Very high follow-up and retention rates, in addition to treatment adherence can be achieved through the use of simple strategies that are cost-effective when compared to the overall costs of such large studies.

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PA5-1
HOW DO TOBACCO AND MARIJUANA INTERACT TO INFLUENCE THE HEALTH CONSEQUENCES OF SMOKING? A SYSTEMATIC AND CRITICAL REVIEW OF THE LITERATURE

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The health effects of smoking tobacco (TOB) are well-known, and smoking marijuana (MJ) may also lead to deleterious health effects. The extent to which TOB and MJ additively or multiplicatively influence health consequences is not clear. To investigate this gap, we conducted a systematic literature review to examine the health effects of TOB and MJ co-use. Included studies had to: (1) examine a “health effect,” defined as a consequence of smoking in the 2014 US Surgeon General Report, or a likely precursor to a consequence of smoking; (2) include participants who used both TOB and MJ or evaluate the statistical interaction of TOB and MJ; and (3) exclude participants who smoked other substances. The first author searched PubMed and PsycInfo with the term “(cannabis OR cannabin OR marijuana OR marihuana) AND (tobacco OR cigar* OR nicotine*)”. The first and second authors independently assessed abstracts of 4048 papers; duplicates and 28 studies (range of publication year=1987-2015) met inclusion criteria. Ten studies examined respiratory symptoms, 9 lung functioning, 12 cancer, and 2 periodontal disease (i.e., one study could examine multiple outcomes). Studies were too methodologically heterogeneous for statistical meta-analysis. Relative to non-use of TOB or MJ, co-use was associated with higher likelihood of health effects in 11 of 13 studies. Relative to use of TOB only, co-use was associated with higher likelihood of health effects in 2 of 4 studies. The statistical interaction of TOB and MJ was significant in 4 of 12 studies; most of these were statistically underpowered to detect interaction effects. Studies varied greatly in average age of participants and definitions of co-use. Given this methodological heterogeneity, we tentatively conclude that co-use of TOB and MJ additively influenced health consequences of smoking in some but not all studies. Future longitudinal studies should focus on frequent smokers of both TOB and MJ, particularly vulnerable populations, as they approach the age at which the health consequences of smoking are typically observed.

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PA5-2
TRENDS IN TOBACCO USE AND CESSATION AMONG ADULT MARIJUANA USERS WITH A HISTORY OF TOBACCO USE, 2003-2012

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About 70% of past 30-day adult marijuana (MJ) users are also current tobacco users. Concerning both MJ and tobacco may increase dependence on either substance and make quitting either more difficult. To identify potential variations between MJ users and non-users in the context of changing marijuana policy, this study assessed prevalence and trends in tobacco cessation by MJ user status. Existing data on tobacco products MJ users consume will also be reviewed. Data for this study came from the National Survey on Drug Use and Health, a cross-sectional, nationally-representative, household interview survey of U.S. civilians. Analyses included 43,220 past 30-day MJ users and 335,239 non-MJ users aged ≥18 who reported ever using tobacco (cigarettes, cigars, pipes, smokeless tobacco). Weighted prevalence estimates (2011-2012) of past 30-day tobacco use, recent tobacco cessation (quit 30 days to 12 months), and sustained tobacco cessation (quit >12 months) were computed overall and by demographics; trends in tobacco cessation were computed in two-year increments from 2003-2012, adjusting for sex, age, and race/ethnicity. Findings reveal that in 2011-2012, among past 30-day adult MJ users who reported ever use of tobacco, 71.2% were past 30-day tobacco users (vs. 36.0% of non-MJ users). Compared to past 30-day MJ users who had not quit tobacco, MJ users who had quit tobacco were less likely to be male, <50 years old, black (vs. white), heavy MJ users, heavy alcohol users, or other drug users. The adjusted prevalence of recent tobacco cessation among MJ users who ever used tobacco increased slightly from 2003-2004 to 2011-2012 (% change=3.2), while sustained tobacco cessation did not change. In conclusion, compared to non-users, past 30-day adult MJ users have higher past 30-day tobacco use prevalence, and lower sustained tobacco cessation prevalence. Interventions that address tobacco cessation in the context of MJ and other substance use may be warranted to reduce this disparity.

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PA5-3
REGULATING RETAIL MARIJUANA: LESSONS LEARNED FROM TOBACCO CONTROL

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BACKGROUND: Marijuana legalization has gained momentum in recent years as Colorado, Washington, Alaska, Oregon, and District of Columbia have legalized retail sales of marijuana. Marijuana legalization advocates in California are planning a 2016 initiative campaign to tax and regulate retail marijuana. Marijuana is often used by tobacco users and/or in combination with tobacco. A central question in the debate to legalize retail marijuana is whether legalization will impact state tobacco control laws. METHODS: Using case study methods, we evaluated marijuana policy debates in Colorado, Washington, Oregon, and Alaska between 2012-2015. We used research on cigarette company tactics and detailed state case studies of tobacco control policymaking in Arizona, Florida, Minnesota, Colorado, Washington, and California to compare tobacco control policy debates between 1970-1990, when youth prevention, sales, clean indoor air, and local control policy debates were beginning to emerge, with comparable debates over legalizing retail marijuana. For this study we obtained from observation and interview notes, initiative campaigns, legislative hearings, government documents, and newspaper articles. FINDINGS: States are undergoing similar policy debates to earlier debates held for controlling tobacco. Pro-marijuana legalization groups are: 1) promoting ineffective school-based programs similar to ones that failed to reduce tobacco use, but quietly promoted by tobacco companies, to displace effective denormalization campaigns; 2) promoting exemptions in clean indoor air laws for public consumption; 3) discussing whether states should preempt local governments from regulating sales, public use, taxation, and marketing for retail marijuana; and 4) justifying exemptions in clean indoor air laws with claims that marijuana is not as harmful as tobacco. These tactics also have implications for existing state tobacco control policies. CONCLUSIONS: Tobacco control researchers should learn from lessons in tobacco control and monitor how tactics used in marijuana policy debates may impact decades of work on tobacco control.

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PA5-4
POLYTOBACCO, ALCOHOL, AND MARIJUANA USE PATTERNS IN COLLEGE STUDENTS: A LATENT CLASS ANALYSIS

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INTRODUCTION: There has been an increasing global interest in polysubstance use among young adults. Three most commonly used substances are tobacco, alcohol, and marijuana. Research on concurrent or co-use is needed to understand use patterns in young adults. METHODS: Data were collected from 3418 college students in Georgia. Use of cigarettes, little cigars/cigarillos (LCC), smokeless tobacco, e-cigarettes, hookah, alcohol and marijuana, were assessed for the past 4 months and past 30 days. Latent class analysis was conducted to identify polysubstance use patterns. Multinomial regression analysis was conducted to determine correlates (e.g., sociodemographics, sociocontextual factors, perceptions of substance use) of class membership. RESULTS: 40.2% of students reported using any tobacco products. Polytobacco use was frequent with 22.7% using at least 2
Adolescent electronic cigarette (e-cig) use is on the rise. Of concern, many e-cigs can be modified to provide an efficient, inconspicuous way to vaporize (i.e., vape) the characteristic odor of smoked cannabis, monitoring rates of vaping cannabis among adolescents is unexplored. Thus, we evaluated: 1) lifetime rates of using e-cigs to vape cannabis among youth is critical. When also considering that vaporized cannabis is difficult to detect due to the lack of the relative safety of vaping cannabis using e-cigs is not well established. Howev

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PA5-5
HIGH SCHOOL STUDENTS USE E-CIGARETTES TO VAPORIZEResearch (HS) students who completed an anonymous survey in Spring 2014 assessing e-cig and cannabis use (51.7% female; mean age 16.00 [SD = 1.28] years). Rates of vaping cannabis using e-cigs were considerable (total sample 5.4%, e-cigarette users 18.0%, cannabis users 18.4%, dual users 26.5%), with students reporting using e-cigs to vape hash oil (e-cig users 15.4%, cannabis users 15.5%, dual users 22.8%) and THC-infused wax (e-cig users 10.0%, canna

The analytic sample comprised 3,847 Connecticut high school (HS) students who completed an anonymous survey in Spring 2014 assessing e-cig and cannabis use (51.7% female; mean age 16.00 [SD = 1.28] years). Rates of vaping cannabis using e-cigs were considerable (total sample 5.4%, e-cigarette users 18.0%, cannabis users 18.4%, dual users 26.5%), with students reporting using e-cigs to vape hash oil (e-cig users 15.4%, cannabis users 15.5%, dual users 22.8%) and THC-infused wax (e-cig users 10.0%, cannabis users 10.2%, dual users 14.8%). Logistic regression indicated that males (OR = 2.05), younger students (OR = .64), e-cig users (OR = 5.27) and cannabis users (OR = 40.89) were most likely to vape cannabis using e-cigs. Rates also differed by HS attended. In sum, rates of vaping cannabis using e-cigs were high, and our findings raise concerns about the lack of e-cig regulations and the potential unforeseen use of modifiable e-cigs for purposes other than vaping nicotine. Currently, the relative safety of vaping cannabis using e-cigs is not well established. However, adults who vape hash oil show increased tolerance and dependence relative to smoked cannabis, likely due to the increased potency of vaporized cannabis. When also considering that vaporized cannabis is difficult to detect due to the lack of the characteristic odor of smoked cannabis, monitoring rates of vaping cannabis among youth is critical.

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PODIUM PRESENTATION 2: GLOBAL EPIDEMIOLOGY OF E-CIGARETTES

**PA6-1 NATIONAL AND STATE-SPECIFIC TRENDS IN SALES AND PRICES OF FLAVORED DISPOSABLE ELECTRONIC CIGARETTES - UNITED STATES, 2011-2015**

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**BACKGROUND:** Use of electronic cigarettes (e-cigarettes) has increased substantially among U.S. adults and youth in recent years. Like other flavored tobacco products, flavored e-cigarettes can be appealing to youth and other naive users. Additionally, lower-cost disposable e-cigarettes may be especially attractive to youth and other price-sensitive consumers. More than two-thirds of youth visit convenience stores (C-stores) at least monthly, where a large proportion of these flavored disposable e-cigarettes (FDEs) are sold. This study tracked multi-year trends in e-cigarette sales and prices, both nationally and in a large proportion of U.S. states. METHODS: We used a customized retail scanner database to assess trends in quarterly unit sales and prices of FDEs sold in C-stores (32 states) and multiple outlets (MULO), including food, drug, mass merchandise, Walmart, club, dollar stores (43 states) during the fourth quarter (Q4) 2011 through the second quarter (Q2) 2015. Data were assessed for the total U.S. and states with sample sizes sufficient for precise estimation. RESULTS: Nationally in Q2 2015, disposable e-cigarettes comprised almost half of all e-cigarette sales in C-stores. Although flavored varieties made up a relatively small proportion of all e-cigarette sales, the proportion of FDEs sold in C-stores increased 456% from Q4 2011 (1.8%) to Q2 2015 (10.0%). In Q2 2015, the proportion of e-cigarette sales in C-stores that were FDEs varied by U.S. region: Northeast (1.5%); South (5.9%); West (8.2%); and Midwest (10.8%). From Q4 2011 to Q2 2015, the average price of FDEs sold in C-stores declined from $8.59 to $7.01 per unit. Trends in sales volumes and prices of FDEs sold in C-stores varied substantially across states included in the analyses. In all assessed states, sales of FDEs were very low or non-existent in MULO stores. CONCLUSIONS: Convenience stores are an increasing source for low-cost, flavored disposable e-cigarettes, with recent sales trends varying across states and regions. Continued state-specific surveillance of FDE sales in C-stores is warranted given the rapidly increasing rate of e-cigarette use among U.S. youth.

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**PA6-2 E-CIGARETTE USE IN CANADA: FINDINGS FROM A NATIONALLY REPRESENTATIVE SURVEY AND POLICY IMPLICATIONS**

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**BACKGROUND:** E-cigarettes containing nicotine are not approved for sale in Canada, although research suggests they are widely available. Smaller studies on e-cigarette use in Canada have indicated that use is common among young people and smokers, but no nationally representative studies have been published to date. The current study examined prevalence and correlates of e-cigarette use in the Canadian population, using the first nationally-representative data available in Canada. METHODS: Data from the 2013 Canadian Tobacco, Alcohol and Drugs Survey (n=14,565) were analysed using logistic regression models to examine sociodemographic correlates of e-cigarette use (ever, and in the past 30 days). FINDINGS: In 2013, 8.5% of Canadians age 15 and older reported having ever tried an e-cigarette; 1.8% had used one in the past 30 days. Prevalence of e-cigarette use varied by smoking status and age, but did not differ overall by sex. Smoking status was the strongest predictor of use (ever and past 30-day; p<0.0001): 37.3% of current smokers had ever tried an e-cigarette (9.6% had used in the past 30 days), compared to 3.0% of never-smokers (0.3% past 30-day) and 5.1% of former smokers (0.9% past 30-day). Age was also a strong predictor (p<0.0001):

prevalence was highest among youth aged 15-19 (19.8% ever; 2.6% past 30-day) and young adults aged 20-24 (20.1% ever; 3.9% past 30-day), and decreased with age. Older e-cigarette users were almost exclusively current or former smokers, while e-cigarette use among youth was reported more often by never-smokers. Dual use with cigarettes was common: the majority of e-cigarette users also smoked conventional cigarettes. The current regulatory framework in Canada, including recent provincial regulations, will be discussed. CONCLUSIONS: E-cigarette use in Canada was particularly high among smokers and young people. While experimentation with e-cigarettes was common among both current and young non-smokers, regular use was much less prevalent. Continued monitoring of e-cigarette use and its relationship with smoking should be a priority, given the rapidly evolving e-cigarette market and implementation of new policy measures.

Funding: This study analyzed public-use data collected by Statistics Canada. This research was supported by the Canadian Cancer Society grant #2011-701019, through the Propel Centre for Population Health Impact. Additional support was provided by a CIHR New Investigator Award (DH), a CIHR Public Health Agency of Canada Chair in Applied Public Health (DH), and a CIHR Vanier Canada Graduate Scholarship (CDC).

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**PA6-3 ELECTRONIC CIGARETTE USE IN THE UK: CURRENT TRENDS IN USE AND PRODUCT PERCEPTIONS**

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The UK is the only country in the world to have official guidance on tobacco harm reduction which promotes the use of nicotine containing products for cutting down, temporary abstention and longer term use to prevent relapse to smoking. This guidance makes clear that new nicotine containing products including electronic cigarettes are safer than continued smoking and this policy context may provide part of the reason why the UK's approach to e-cigarette regulation has differed from other countries. There are currently 2.6 million e-cigarette users in the UK (and 10 million smokers) and recent data suggests that these devices are contributing to recent reductions in smoking prevalence. This presentation will outline the latest trends in e-cigarette use in adults and youth but also describe how media and health service concerns about these products may have contributed to rising perceptions of product harms amongst consumers. It will also describe new legislation in England, Wales and Scotland to regulate electronic cigarettes in the context of the European Tobacco Products Directive (due to be implemented from May 2016) which will place restrictions on marketing, nicotine content and require new standards for product labelling. The presentation will conclude by outlining how a national programme for research on e-cigarettes, supported by some of the main research funders in the UK, will provide new evidence to inform the future regulatory context surrounding these devices.

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**PA6-4 ELECTRONIC CIGARETTES USING STATUS AND RELATING FACTORS AMONG KOREAN ADULT SMOKERS: FINDINGS FROM THE INTERNATIONAL TOBACCO CONTROL (ITC) KOREA SURVEY**

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The aim of this study was to investigate the current usage and attitude of e-cigarettes in Korean adult smokers and to analyze associated factors by using 2010 ITC Korea survey data. The study was performed by telephone survey using random-digit-dialing (RDD) methods during from October to December in 2010. The study participants were adult smokers aged 18 years or older who have smoked more than 100 cigarettes in their lifetimes and who have smoked at least once in the past 30 days. To identify associated factors with e-cigarettes, we analyzed smoker’s characteristics and attitudes to smoking in the multivariate logistic regression model. The number of participating smokers was 1560. Among them,
PA6-5
ELECTRONIC CIGARETTE AWARENESS AND USE AMONG CHINESE ADULTS IN HONG KONG

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INTRODUCTION: Electronic cigarettes (e-cigarettes) have gained popularity rapidly worldwide. We examined the awareness and ever use of e-cigarettes, and reasons for e-cigarette use in a probability sample of adults in Hong Kong.

METHODS: Cross-sectional data were collected in 2014 from Chinese adults aged 15-65 in Hong Kong (819 never smokers, 800 former cigarette smokers, 800 current cigarette smokers) via computer-assisted telephone interviews (response rate: 73.8%). Analysis was limited to a subset of 809 respondents (i.e., 357 never smokers, 369 former cigarette smokers, 183 current cigarette smokers) who were randomly selected to answer questions on e-cigarettes. Chi-square tests compared e-cigarette awareness and ever use by gender, age, education, and cigarette smoking status. Multivariable logistic regression examined the association between e-cigarette awareness and covariates. RESULTS: 75.4% of adults had heard of e-cigarettes, and 2.3% reported having used e-cigarettes. Greater awareness was associated with male gender and higher education. Ever use of e-cigarettes was more common among males (p<0.03), younger adults (p=0.002), and current cigarette smokers (p<0.001). Common reasons for using e-cigarettes were curiosity (47.4%), the stylish product design (25.8%) and quitting smoking (13.6%). CONCLUSIONS: Awareness of e-cigarettes was widespread in Hong Kong. Despite the low rate of e-cigarette ever use, its relation with younger age and cigarette smoking is of concern. E-cigarette use should be monitored routinely. Interventions should target young adults and cigarette smokers, and address the marketing messages especially about the effect of e-cigarettes on smoking cessation.

PA6-6
PREVALENCE AND CORRELATES OF E-CIGARETTE PERCEPTIONS AND TRIAL AMONG MEXICAN ADOLESCENTS

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BACKGROUND: The explosive growth of e-cigarette use is disrupting the landscape of the nicotine delivery, yet the vast majority of research has focused on high-income countries. This study aims to assess the prevalence and correlates of e-cigarettes perceptions and trial among young adolescents in Mexico, where e-cigarette sales and marketing is banned. METHODS: A cross-sectional survey in 2015 from a school-based sample of middle school students from three urban areas (n=10,146). Multilevel logistic models that adjusted for clustering at the school level (xtmelogit) were used to assess correlates of e-cigarette awareness, perceived harm, and usage. Students who had only tried e-cigarettes were compared with students who reported dual use, use of conventional cigarettes only, or never use of either type. As e-cigarettes are marketed as new technologies and are mainly advertised on internet, we assessed use as a function of technophilia, assessed by summing the number of media electronic devices they used, including smartphone, tablet, and computer. RESULTS: 51% of students had heard about e-cigarettes, 20% believed e-cigarettes were less harmful than conventional cigarettes, and 10% had tried them. Independent correlates of e-cigarette awareness and trial included established risk factors for smoking, as well as technophilia and greater Internet advertising exposure. The strongest independent correlate of trial was the perception that e-cigarettes are less harmful than conventional cigarettes (AOR=3.99). Exclusive e-cigarette triers (4% of the sample) had significantly higher technophilia, bedroom Internet access, and Internet advertising exposure compared to conventional cigarette triers (19%) and never triers (71%), but not compared to dual triers (6%). CONCLUSION: This study suggests that adolescent e-cigarette awareness and use is high in Mexico, in spite of its ban. Utilization of media technologies and Internet advertising exposure discriminate youth have of tried e-cigarettes from those who have not, highlighting the need for research on these topics, including policy and other intervention strategies to reduce their apparent effects on e-cigarette use.
**PODIUM PRESENTATION 2: SECOND-EXPOSURE TO E-CIGARETTES AND TOBACCO**

**PA7-1 OCCUPATIONAL INTRUSION OF ELECTRONIC CIGARETTE AEROSOL INTO NEIGHBORING SHOPS**

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Occupational use of electronic cigarettes (EC) is concerning due to the potential negative effects on indoor air quality, chemical exposure of non-vapers, contamination of surfaces and intrusion of EC aerosol into neighboring venues. Vapor shops (VS) are one workplace where indoor EC use is not only inevitable but explicitly encouraged. Most VS encourage customers to participate in events such as cloud blowing and vapor trick competitions. Additionally, most VS offer free e-juice sampling for customers and supply employees free e-juice while "on the clock". With such heavy vaping activity indoors, the present study sought to characterize airborne particulate levels in VS and determine if EC aerosol was intruding into neighboring shops by measuring particulate concentration using a Grimm field portable aerosol spectrometer. Fourteen randomly selected VS in the Oklahoma City area were sampled for 15-120 minutes. At these locations, 8 adjacent shops (AS) and 10 control shops (CS) across the street from the VS were also measured the same day. Size distribution modes for 1.3 and nearly half particles >0.23 particles, suggesting a large presence of ultrafine particulate matter. Fine particle matter was 5-100 fold greater in both VS and CS than in VS. Nearly half of the VS sampled had total respirable particulate above the OSHA limit for particulates not otherwise regulated (5 mg/m³) with a median of 4.72 mg/m³. Total particulate matter (TPM) was 20 fold greater in VS (7.37 mg/m³) than control (0.36 mg/m³; p=0.006) but only 3 fold greater than AS (2.35 mg/m³; p=0.088), showing that adjacent shops have TPM levels greater than CS but not significantly so (p=0.106). Indeed, at one location, EC aerosol was observed intruding into the neighboring shop through the ventilation system and particle counts were actually higher at this NS than in the VS. Just as indoor smoking rooms and lounges are expected to prevent intrusion of smoke to other establishments, VS should be held to the same standard. Full shift personal sampling should be conducted to determine the TPM, respirable particulate matter and formaldehyde exposures of VS employees.

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**PA7-2 QUANTIFICATION OF SECONDHAND SMOKE EXPOSURE IN SMOKE-FREE AND SMOKE-PERMITTED SUBSIDIZED MULTUNIT HOUSING**

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BACKGROUND: Secondhand smoke (SHS) can transfer throughout multiunit housing (MUH) via shared air and spaces. As there is no safe level of SHS, prohibiting smoking in these environments is the only way to eliminate involuntary exposure in MUH. METHODS: Residents from a smoke-free (n=25) and a smoke-permitted (n=28) building were recruited. A SidePak (TSI, Inc.) was placed inside individual units for approximately 48 hours and recorded 1-minute concentrations of particulate matter (PM; in µg/m³). Mean PM₁₀ concentrations were compared between units with and without active smoking using the independent sample t-test in SPSS (IBM). Residents were also asked about their knowledge and experiences with smoking and SHS inside their unit and building prior to the assessment. RESULTS: The mean overall PM₁₀ concentration was 5.23 µg/m³ in the smoke-free building and was 73.73 µg/m³ in the smoke-permitted building (p=0.002). Mean PM₁₀ concentrations were higher in units occupied by non-smokers in the smoke-permitted building (n=15; 9.79 µg/m³) compared to the smoke-free building (n=18; 4.98 µg/m³; p=0.037). No differences were observed in mean PM₂.5 concentrations between units occupied by smokers and non-smokers in the smoke-free building (p=0.377). Among units with a smoke-free home policy, the maximum 1-minute PM₁₀ concentration reached 72.32 µg/m³ in the smoke-free building and 441.60 µg/m³ in the smoke-permitted building. CONCLUSION: Despite enforcing smoke-free home rules, the mean and peak PM₁₀ concentrations were significantly higher in the smoke-permitted building compared to the smoke-free building, confirming that voluntary smoke-free home rules alone do not protect from SHS exposures when smoking occurs inside the building. Maximum 1-minute concentration of PM₁₀ in units occupied by non-smokers reached levels that are classified as hazardous by the U.S. Environmental Protection Agency’s Air Quality Index in the smoke-permitted building. Smoke-free building policies must be actively enforced to completely protect against exposures.

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**PA7-3 QUANTIFICATION OF THIRDHAND SMOKE POLLUTION IN SMOKE-FREE AND SMOKING-ALLOWABLE UNITS AND COMMON AREAS OF MULTIUNIT HOUSING**

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BACKGROUND: Thirdhand Smoke (THS) can remain in the environment after active smoking ceases and can react with airborne chemicals to form tobacco-specific carcinogens. In multiunit housing (MUH), voluntary smoke-free home rules do not fully protect from tobacco smoke exposure and nicotine deposits on surfaces may further prolong exposures to harmful pollutants. The current study quantifies THS contamination in smoking and non-smoking units and common areas of MUH. METHODS: Surface nicotine concentrations were measured in 15 non-smoking units, 12 smoking units, and 27 indoor common areas across smoking-allowable MUH buildings. Two samples were taken from the walls of each unit. Duplicate samples were analyzed from 9 units and 9 common areas. Nicotine was extracted from the wipe and analyzed using LC-MS/MS. Results are presented as the concentration of nicotine in micrograms per square meter (µg/m²). The geometric mean and standard deviation (SD) of measured nicotine concentrations were calculated. Non-parametric statistical testing assessed differences between analytic groups. RESULTS: A high correlation was observed for samples taken within the same unit (r(overall)=0.854, p<0.001), though more variation was observed in smoking units (r(overall)=0.615) than non-smoking units (r(overall)=0.819). Nicotine concentrations ranged from 0.0 - 64.4 µg/m² in non-smoking units and from 7.3 - 12,603.6 µg/m² in smoking units. The geometric mean (SD) nicotine concentration was 4.6 µg/m² (4.7) in non-smoking units and 91.5 µg/m² (8.8) in smoking units (p<0.001). Nicotine concentrations measured in common areas ranged from 2.8 - 199.3 µg/m² (geometric mean: 23.6 µg/m² (3.3)). Geometric mean nicotine concentrations did not differ by proximity to smoke-permitted units (40.6 µg/m² (2.9)), smoke-free units (13.1 µg/m² (8.3)), or other areas of the building (20.1 µg/m² (3.1)), p=0.393. CONCLUSIONS: Despite enforcing smoke-free home rules, nicotine contamination was present in non-smoking units. Nicotine contamination is not limited to areas near active smokers, but is ubiquitous in common areas of MUH. Therefore, partial smoke-free policies do not protect against THS exposures in MUH.

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**PA7-4 PROPERTIES OF E-CIGARETTE EMISSIONS THAT PROMOTE SECONDHAND EXPOSURE**

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Use of electronic nicotine delivery systems (ENDS), such as electronic cigarettes (e-cigarettes), is increasing in the United States and globally. Despite the growing
use of e-cigarettes, little is known about the physical and chemical properties of e-cigarette emissions exhaled by the user that determine the extent of second-hand exposure. The objective was to produce a physiologically relevant e-cigarette aerosol for assessing second-hand exposure by mimicking the temperature and humidity found in a user’s respiratory system. This approach produced an exhaled aerosol with more representative physical and chemical properties than sampling directly from the e-cigarette. The output from the system corresponded to the expected aerosol size distribution and chemical composition in the user’s lungs. We used the multi-path particle dosimetry (MPPD) model to predict the deposited and exhaled fractions of the e-cigarette aerosol. Our experiments evaluated the emissions produced by two e-liquids from one device. The aerosol size distribution produced by both liquids under dry and humid conditions were different. We found that elevated humidity and residence time inside the simulated lung activated the growth of condensation nuclei. The resulting aerosol size distribution inside the simulated lung had a smaller median diameter (184 nm versus 220 nm) but had a broader range (GSD of 3.4 versus 2.8). The aerosol chemical composition changed under humid conditions because the humectants promoted absorption of nicotine, flavorings, and preservatives into the liquid droplets. Nicotine and propylene glycol were the only compounds found in both the gas and aerosol phase. The measured e-cigarette emission aerosol size distribution was the input into the MPPD model. The dosimetry model predicted that 47% of mass of inhaled emissions were deposited in the lung, with 40% in the alveolar region and 53% was exhaled. These initial data provide evidence that second-hand exposure to e-cigarette emissions can be significant. The size distribution and chemical composition of the exhaled emissions promote a stable aerosol that can travel significant distances within an environment.

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PA7-5

USE OF ELECTRONIC CIGARETTES IN SMOKE-FREE ENVIRONMENT

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BACKGROUND: Although most states prohibit cigarette smoking in public places and workplaces, very few local jurisdictions regulate in-door e-cigarette use. Given the dramatic increase in e-cigarette use, there is an urgent need to examine population perceptions and behaviors of using e-cigarettes in smoke-free environment.

METHODS: An online survey was administered to nationally representative adults in 2014 (N=8,619). Outcome measures included whether people agreed using e-cigarettes should be illegal in places where smoking is illegal, and whether e-cigarette users have ever used an e-cigarette in places where cigarette smoking is not allowed. Multivariate logistic regressions were conducted to examine the associations of the outcomes with sociodemographic factors and e-cigarette and cigarette use status. As suggested by smoke-free literature, we hypothesized that younger and more educated people are more likely to support e-cigarette ban and older less likely to favor a ban, which had no such policy. We assessed associations of the outcomes with demographic characteristics and whether e-cigarette users have ever used cigarettes.

RESULTS: Overall, 34.8% adults disagreed that using e-cigarettes should be illegal in smoke-free environment. Among current e-cigarette users (N=957), 59.5% ever used e-cigarettes in smoke-free environment and only 2.5% of them reported negative reactions from other people. Surprisingly, younger people were less likely to support e-cigarette ban and more likely to have used e-cigarettes in smoke-free environment (p<.05). Relative to lower educated people, those with college degree or above were more likely to support e-cigarette ban (p<.01), but no less likely to have used e-cigarettes in smoke-free environment. Other predictors for not supporting e-cigarette ban were being male, non-Hispanic Black, former or current cigarette users, and former or current e-cigarette users. Using e-cigarettes daily and being current smokers also predicted ever using e-cigarettes in smoke-free environment. CONCLUSIONS: Using e-cigarettes in smoke-free environment was considerably more tolerable compared to using cigarettes. Younger and higher educated people demonstrated more supportive attitudes and/or behaviors associated with e-cigarettes than cigarettes.

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PA7-6

ASSESSMENT OF RESIDENTS’ ATTITUDES AND SATISFACTION BEFORE AND AFTER IMPLEMENTATION OF A SMOKE-FREE POLICY IN BOSTON MASSACHUSETTS MULTISTORY HOUSING

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BACKGROUND: In 2012, the Boston Housing Authority (BHA) in Massachusetts implemented a smoke-free policy prohibiting smoking within its residences. We sought to characterize BHA resident experiences before and after the smoke-free policy implementation, and compare them to that of residents of the nearby Cambridge Health Alliance (CHA), which had no such policy.

METHODS: We recruited a convenience sample of nonsmoking residents from the BHA and CHA. We measured residents’ awareness and support of their local smoking policies before and 9–12 months after the BHA’s policy implementation, as well as BHA respondents’ attitudes towards the smoke-free policy. We assessed tobacco smoke exposure (TSE) via saliva cotinine, airborne nicotine, and self-reported number of days smelling smoke in the home. We evaluated the extent to which satisfaction with policy enforcement predicted general housing satisfaction at follow-up using linear regression. RESULTS: At follow-up, 91% of BHA respondents knew the correct rule about smoking in their housing authority (no smoking in apartments) and 82% were supportive of such a policy. By 15% in the CHA who knew the correct rule (smoking only allowed in apartments) and 60% who supported a smoke-free policy. BHA residents believed enforcement of the smoke-free policy was low. Fifty-one percent of BHA respondents indicated that other residents “never” or “rarely” followed the new smoke-free rule and 41% of respondents dissatisfied with policy enforcement. Dissatisfaction with enforcement was the strongest predictor of general housing satisfaction, while objective and self-reported measures of TSE were not predictive of satisfaction. At follow-up,
only 53% of BHA respondents indicated they would report a violation of the smoke- free rule to building management if they saw one and 24% of BHA participants said they had actually complained to someone in charge about policy violations.

CONCLUSIONS: Nonsmoking residents’ support for smoke-free policies was high. However, lack of enforcement may undermine the policy and cause frustration and resentment among residents, potentially leading to a decrease in housing satisfaction.

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PODUM PRESENTATION 2: MARKETING OF TOBACCO PRODUCTS

PA8-1

PHARMACIES SELL CIGARETTES CHEAPER: RESULTS FROM RETAIL MARKETING SURVEILLANCE IN STATE AND NATIONAL SAMPLES

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BACKGROUND: Approximately 9% of tobacco products are sold in stores with a pharmacy counter. Sales data indicate that 1 in 20 consumers with chronic conditions that are exacerbated by smoking also purchased cigarettes when they filled prescriptions. Arguments to ban tobacco sales in pharmacies focus on the paradox of promoting health care and tobacco in the same retail space. This research examined the paradox of pricing for tobacco and non-tobacco products in pharmacies compared to other types of stores. METHODS: Study 1 recorded prices of Marlboro, Newport, Pall Mall, the cheapest cigarettes, and bottled water in a random sample of licensed tobacco retailers (n=579) in California in 2014. Study 2 collected comparable data from tobacco retailers (n=2,603) in school enrollment zones for representative samples of US 8th, 10th and 12th graders in 2012. OLS regressions modeled prices of cigarettes (minus sales and excise taxes) and bottled water (minus sales tax) as a function of store type and neighborhood demographics. RESULTS: Pharmacies were 7.3% of tobacco retailers in Study 1 and 8.5% in Study 2. In Study 1, average prices in pharmacies were: Marlboro $5.38 (SD=0.50), Newport $5.79 (SD=0.88), Pall Mall $4.43 (SD=0.75), $3.57 (SD=0.80) for the cheapest pack, and $1.66 (SD=0.18) for Aquafina. The cheapest pack cost significantly less in pharmacies than other store types: average estimated difference ranged from $0.47 less than liquor stores to $1.19 less than supermarkets. Similar patterns were observed for Marlboro and Pall Mall. In Study 2, Marlboro cost significantly less in pharmacies than all other store types except tobacco shops. Conversely, bottled water cost significantly more in pharmacies than in all other store types, and this pattern was the same in both studies. Cigarettes cost less in areas with higher proportions of African Americans and youth, but race and age were not related to price of water. CONCLUSIONS: Compared to other types of stores, pharmacies charged customers less for cigarettes and more for bottled water. State and local policies to ban tobacco sales in pharmacies would eliminate an important source of discounted cigarettes.

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PA8-2

HIDING THE TOBACCO POWERWALL REDUCES CIGARETTE SMOKING RISK IN ADOLESCENTS: AN EXPERIMENTAL INVESTIGATION

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An important component of Point-of-Sale (POS) advertising is the tobacco ‘power wall’. Tobacco powerwalls, which display hundreds of different cigarette packages, are usually placed in a highly conspicuous location at POS, typically behind the cashier. As such, hiding (or banning) the tobacco powerwall has emerged as a viable regulatory option in several countries (e.g., Ireland) but stronger evidence that this action reduces smoking is needed. The current study sought to expand what is known in this domain by experimentally examining whether changing the placement or visibility of the tobacco power wall in a true-to-life convenience store had any effect on cigarette smoking risk among adolescents. The study was conducted in the RAND StoreLab (RSL), a true-to-life convenience store that was developed to experimentally evaluate how changing aspects of tobacco advertising at POS influences tobacco use risk and behavior. A randomized, between-subjects experimental design with three conditions that varied the location or visibility of the tobacco power wall within the RSL was used. The conditions were: cashier (the tobacco power wall was located in its typical position behind the cashier); sidewalk (the tobacco power wall was located on a sidewalk away from the cash register);
or hidden (the tobacco power wall was located behind the cashier but was hidden behind an opaque wall). The sample included 241 middle and high school students (53% female, 58% Caucasian, 28% African-American) who were randomized to one of the three conditions. Participants then shopped in the RSL and once they exited the store, completed items that measured their future risk of smoking. Results revealed that hiding the tobacco power wall significantly reduced the risk of future smoking compared to the cashier condition (p<.02) but that locating the tobacco power wall on a sidewalk away from the cashier had no effect on future smoking risk compared to the cashier condition (p=0.86). Hiding the tobacco power wall at POS represents a strong regulatory option for reducing the impact of the retail environment on cigarette smoking risk in adolescents.

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PA8-3 DIRECT MAIL AND E-MAIL MARKETING OF ELECTRONIC CIGARETTES IN THE US

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Awareness and use of electronic cigarettes have increased rapidly in the US, which may be explained by the notable increases in spending on advertising and promotion of e-cigarettes. Direct mail marketing is a common tactic used by tobacco companies to promote cigarettes and smokeless tobacco, and may be a channel to promote e-cigarettes. This advertising strategy allows for the delivery of tailored messaging based on demographics and smoking history, and is a major distribution channel for promotions, such as coupons. The aim of this study is to investigate the content of e-cigarette direct mail and email advertisements, and to analyze data on direct mail spend and mail volume. Mintel Comperemedia, a full-service advertising firm that tracks direct mail and opt-in email advertising, was used to acquire all direct mail and email advertising for e-cigarette brands in the US between January 2013 and June 2015. The advertisement and associated meta-data on brand, spend ($), and mail volume were summarized. Data on spend and mail volume were available for direct mail ads only. Characteristics of ads were examined and include promotions, advertising of other tobacco products and flavored products. Over the study period, 209 unique advertisements were identified and consisted of 156 direct mail ads and 53 email ads. The following brands made up 96% of the total ads: Vuse (87 ads), MarkTen (81 ads), GreenSmoke (14 ads), e-Swisher (11 ads), Blu (4 ads), and Ploom (3 ads). Spending on direct mail advertising totaled $32.0 million, with MarkTen ($19.2 million) and Vuse ($10.3 million) encompassing 92% of total expenditures. Total mail volume for direct mail was 62.6 million mailings, with the most for MarkTen (38.1 million) and Vuse (20.5 million). Fifty-nine percent of all ads contained a promotional offer; 66% of all ads featured flavored products; and 44% of direct mail ads featured advertising for other tobacco products, such as Camel cigarettes. The results suggest that MarkTen and Vuse are the primary e-cigarette brands using direct mail and email to reach consumers. Future studies should continue to monitor e-cigarette advertising across all advertising channels.

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PA8-4 THE IMPACT OF CHINA NATIONAL TOBACCO COMPANY’S STRATEGY OF GROWING FLAGSHIP CIGARETTE BRANDS ON CHINESE URBAN SMOKERS: FINDINGS FROM THE ITC CHINA SURVEY

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BACKGROUND: The China National Tobacco Company (CNTC) has been expanding its cigarette production through a strategy of growing flagship cigarette brands in the past decade. Each flagship brand offers a wide range of variants targeting at different type of consumers. Little is known about the impact of this strategy on consumer brand and variant choices and smoking behaviour. RESEARCH OBJECTIVES: To examine the impact of the flagship brand strategy on subsequent changes in the brand and prevalence of the leading cigarette brand families and their variants. METHODS: Data were from a longitudinal co-hort sample of smokers from Waves 1 to 4 of the International Tobacco Control Policy Evaluation Project (ITC) China Survey. The sample consists of 8,141 urban adult smokers in six Chinese cities: Beijing, Changsha, Guangzhou, Shanghai, Shenyang and Yinchuan. RESULTS: The total number of reported cigarette brands decreased from 92 to 71. The CNTC aggressively promoted 30 flagship brands in recent years. Our data demonstrate that smokers reporting smoking 20 of these flagship brands in Wave 1 and 28 in Wave 4. In contrast, the number of reported non-flagship brands smoked dropped from 60 to 43. The number of brand variants grew from 212 to 272. The number of flagship brand variants increased from 102 to 187. In contrast, the number of non-leading brand variants decreased from 110 to 85. The prevalence of smokers reporting smoking flagship brands rose from 59.8% to 82.8%. CONCLUSIONS: Our findings suggest that CNTC’s strategy had been successful in reducing the number of brands while also encouraging more urban smokers to smoke flagship brands and their ever-increasing variants. China government should take action to constrain CNTC’s ability to entice consumers to smoke the leading brands and offer more variants.

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PA8-5 SUBSTITUTABILITY OF REDUCED NICOTINE CIGARETTES AND ELECTRONIC CIGARETTES: THE EXPERIMENTAL TOBACCO MARKETPLACE AS A TOOL TO INFORM REGULATORY STANDARDS FOR NOVEL PRODUCTS

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Among a population-based sample of Dutch smokers, we found greater demand for conventional factory-made cigarettes (FMCs) relative to either very low nicotine (VLN) or electronic cigarettes (ECs). Demand was assessed with independent product purchase tasks, and across all price points FMCs were valued more. This suggests the cost of VLNCs/ECs must be substantially less than FMCs or it may be necessary to ban the sale of regular nicotine FMCs (mandated nicotine reduction), if VLNCs/ECs are expected to replace FMCs. The current study tests these assumptions directly by examining substitutability of VLNCs and ECs, in the context of an online experimental tobacco marketplace (ETM) that mirrors real-world options for consumers in the Netherlands. The ETM was completed by 842 Dutch smokers, aged 16 years or older, during the second wave of a web-based consum-
er survey conducted between July and August 2015. Respondents viewed a virtual store comprised of pictures and descriptions for up to 10 products: conventional cigarettes (FM and roll-your-own versions), VLNCs (FM and roll-your-own versions), ECs (disposable, cartridge, and tank systems), and nicotine replacement therapies (lozenges, patches, and tabs). Product availability depended on randomization to one of three conditions: 1) all product classes, 2) no ECs, or 3) no VLNCs. Within each of the three conditions, five scenarios that varied only by the cost for conventional cigarettes were completed: a) market price, b) ½, c) 2x, d) 4x, and e) unavailable. Cost for other products remained constant. Respondents were given an account balance consistent with typical tobacco expenditure and asked to estimate how much of each product they would like to purchase assuming these were the only products available for the next seven days. This mixed design study provides a powerful test for the substitutability of VLNCs and ECs, as measured by cross-price elasticity, or the change in consumption when conventional cigarette prices increase. We also test whether substitution estimates are influenced when product classes are banned outright, thereby providing evidence to inform tobacco control regulations under consideration.

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**PA8-6**

**NATIONAL EVIDENCE LGBT ARE MORE FREQUENTLY EXPOSED TO TOBACCO MESSAGES ON SOCIAL MEDIA BUT NOT ON TELEVISION**

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BACKGROUND: Lesbian, gay, bisexual and transgender (LGBT) populations use tobacco at disparately higher rates than non-LGBT nationwide. The tobacco industry has a well-documented history of marketing to LGBT, likely contributing to this disparity. This study explores differences in exposure to pro- and anti-tobacco related messages on new and social media, among LGBT and non-LGBT populations.

METHODS: This study reports results from LGBT (N=1,092) and non-LGBT (N=16,430) respondents to a 2013 nationally representative cross-sectional online survey of US adults (N=17,522). We calculated weighted percentages and used chi-square and logistic regression in our predictive models.

RESULTS: LGBT participants reported more exposure to, searching for, or sharing messages related to tobacco couponing, e-cigarettes, and anti-tobacco advertising on new or social media (Twitter, Facebook, YouTube and Tumblr) than did non-LGBT (p<0.05). Conversely, LGBT reported less frequent exposure to tobacco-related messages on traditional media sources such as television – notably anti-tobacco messages – compared to non-LGBT (p<0.01). Specifically, compared to non-LGBT, LGBT reported significantly more exposure to tobacco-related messages on Facebook, YouTube, Tumblr, e-mail, television viewing websites, and Twitter; and less exposure to tobacco content on traditional television (p<0.05). Results varied depending on tobacco content area (e.g., couponing, e-cigarettes, and anti-tobacco advertising; details to be presented).

CONCLUSIONS: This study has important implications for tobacco control and prevention outreach efforts to LGBT. While tobacco prevention efforts appear to be reaching LGBT on traditional television, it is to a lesser extent than non-LGBT populations. Television and other traditional methods of media outreach continue to be heavily utilized in tobacco control and prevention; however, it appears that targeted efforts on more novel media would better reach LGBT populations, who are at increased risk for tobacco use compared to the general population. It is important to re-evaluate these methodologies and make better use of social media to reach LGBT populations and address this disparity.

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**PODIUM PRESENTATION 2: GENETICS AND SMOKING**

**PA9-1**

**DETERMINATION OF PREDICTORS OF CYP2A6 PROTEIN LEVELS AND NICOTINE METABOLISM IN A HUMAN LIVER BANK: INFLUENCE OF GENETIC AND NON-GENETIC FACTORS**

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CYP2A6 genetic variation is associated with interindividual differences in rates of nicotine metabolism in vivo, and resulting altered smoking behaviors. Genotype is associated with altered CYP2A6 mRNA, protein expression, and enzyme activity. Here we expand on earlier investigations of CYP2A6 into a larger liver bank, incorporating sequencing and miRNA analyses. Human livers (n=360) were genotyped for CYP2A6 reduce-of-function alleles and analyzed for CYP2A6 protein levels and activity (nicotine C-oxidation, NCO; coumarin 7-hydroxylation, C7H). Rates of NCO and C7H were strongly correlated (r=0.8, P<0.0001). Livers with variant CYP2A6 alleles were associated with lower CYP2A6 protein levels (P<0.01), and enzyme activity for NCO (P<0.01) and C7H (P<0.03). Female livers were associated with higher protein levels (P<0.04), NCO (P<0.04), and C7H (P<0.02) relative to male livers. CYP2A6 protein (r=0.1, P=0.02) and NCO (r=0.2, P=0.0008), but not C7H (r=0.5, P=0.4), were positively correlated with age. Overall, <5% of the variation in CYP2A6 protein levels could be accounted for by genotype, gender, and age, collectively (P=0.02, P=0.09, P=0.03, respectively). NCO and C7H activity were positively correlated with both CYP2A6 protein levels (NCO r=0.8, P<0.0001; C7H r=0.7, P<0.0001) and cytochrome P450 reductase (POR) protein levels, a coenzyme necessary for CYP-mediated drug metabolism (NCO r=0.4, P=0.0001; C7H r=0.2, P=0.001). 41.5 and 0.3% of the variation in NCO activity could be accounted for by genotype, gender, and age, collectively (P=0.02, P=0.09, P=0.03, respectively). NCO and C7H activity were positively correlated with both CYP2A6 protein levels (NCO r=0.8, P<0.0001; C7H r=0.7, P<0.0001) and cytochrome P450 reductase (POR) protein levels, a coenzyme necessary for CYP-mediated drug metabolism (NCO r=0.4, P=0.0001; C7H r=0.2, P=0.001). 41.5 and 0.3% of the variation in NCO activity could be accounted for by genotype, gender, and age, collectively (P=0.02, P=0.09, P=0.03, respectively). Together these data indicate that substantial variation in CYP2A6 and enzyme activity are not yet accounted for, which will be examined through assessment of miRNA levels, miRNA regulation, and sequencing for novel CYP2A6 variants. As CYP2A6 genotype and phenotype help personalize smoking cessation pharmacotherapy, identifying sources of interindividual variation may improve efforts to quit smoking.

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PA9-2
GENE BY ENVIRONMENT INVESTIGATION OF INCIDENT LUNG CANCER RISK IN AFRICAN-AMERICANS

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Genome-wide association studies of African-ancestry populations and others have identified associations between specific single nucleotide polymorphisms (SNPs) linked to both smoking quantity and lung cancer. The degree to which increased susceptibility to lung cancer is driven by increased smoking, increased inherent risk, or the result of environment interactions is not well understood. We analyzed associations between 28 SNPs previously associated with smoking quantity and lung cancer in 7,156 African-American females in the Women’s Health Initiative (WHI) SNP Health Association Resource (SHARe). Top nominally significant SNPs for cigarettes smoked per day (CPD) in the WHI sample were next analyzed for main effects of SNP and interactions between SNPs, CPD and pack-years for incident lung cancer in an independent sample from a multi-center case-control study of African-American females and males (1,078 lung cancer cases and 822 controls). Nine nominally significant SNPs for CPD in WHI SHARe were associated with incident lung cancer (corrected p-values from 0.027 to 6.09x10^-5) (alpha=0.05/28=0.0017). CPD was found to be an effect modifier between SNP and lung cancer for six SNPs, including rs2036527[A]betaSNP-CPD=0.017, p=0.0061, corrected p=0.054) in the 5’ distal enhancer region of CHRNA5 – previously associated with CPD in a genome-wide meta-analysis of African-Americans and other variants (rs7180002, rs17468278, rs951266, rs1051730 and rs17405217). However, none of the interactions were robust to correction for multiple comparisons (alpha=0.05/9=0.0055). These results suggest that variants in the chromosome 15q25.1 region are robustly associated with CPD and lung cancer in African-Americans and that the relationship is complex. The allelic dose effect of these polymorphisms on lung cancer risk is most pronounced in lighter smokers, while the allele is less pronounced in heavier smokers. These results replicate association between the 15q25.1 region and lung cancer susceptibility, moderated by higher smoking quantity in African Americans. Additional research is needed to understand the mechanisms underlying smoking-dependent and independent lung cancer risk.

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DNA METHYLATION CHANGES AND ALVEOLAR EPIGENOMES IDENTIFIED THROUGH INTEGRATION OF SMOKING-ASSOCIATED

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PA9-5
NOVEL TOBACCO SMOKE-RESPONSIVE GENE ENHANCERS IDENTIFIED THROUGH INTEGRATION OF SMOKING-ASSOCIATED DNA METHYLATION CHANGES AND ALVEOLAR EPICGENOMES

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Smoking-associated changes to the epigenome may contribute to lung cancer predisposition. Alterations in DNA methylation associated with tobacco smoke exposure have been described in surrogate tissues, but whether these same marks are conserved or have functional consequences in the lung remain open questions. To identify differences in DNA methylation associated with tobacco smoking, we performed an epigenome-wide association study of histologically normal lung tissue from lung cancer patients enrolled in the Environment And Genetics in Lung cancer Etiology (EAGLE) study [1] and replicated our findings in samples from The Cancer Genome Atlas (TCGA) [2]. Through this approach we identified seven CpGs that were hypomethylated in current smoker lung tissue relative to current non-smoker lung tissue, with methylation varying inversely by smoking duration. Integration of these loci with epigenomic data collected from primary alveolar epithelial cells and A549 lung adenocarcinoma cells indicated that four CpGs border differentially methylated regions marked by enhancer-specific histone modifications. One region was intergenic and three were intronic (in AHRR, NOTCH1, and CDC42EP3 genes). At these same loci, ChIP and reporter-gene assays revealed that A549 cells sustained enrichment of enhancer features and increased enhancer activity after 24 hours exposure to cigarette smoke condensate (CSC). Lastly, within 1 Mb of these enhancers, CSC also affected expression of several genes related to the xenobiotic response and lung cancer risk, including AHRR and CYP1B1, which were induced; and NRIAA3, an orphan nuclear receptor that was downregulated by CSC in A549 cells and is underepressed in TCGA lung tumor tissue relative to normal tissue. Together, these findings indicate that certain DNA methylation differences associated with tobacco smoke exposure may be secondary effects of histone modifications that underlie changes in enhancer activity. Thus, DNA methylation might be a convenient indicator of gene regulatory changes that occur in response to chronic environmental exposures.


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PA9-6
A NOVEL ASSAY FOR ASSESSMENT OF TOBACCO-INDUCED CANCER RISK

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BACKGROUND: Tobacco smoking is the number one preventable cause of death worldwide. Tobacco smoke contains known carcinogens and high levels of reactive oxygen species which can cause DNA damage and lead to cancer initiation. Recently, we developed a novel technique named primer-anchored DNA damage detection assay (PADDA) that allows for the quantification (q-PADDA) and fingerprinting (f-PADDA) of DNA damage in the human genome. Moreover, we have reported that q-PADDA has higher sensitivity than other available assays and can detect DNA damage induced by a single puff of tobacco smoke. Here, we aim to quantify and map tobacco-induced DNA damage and to correlate the location of identified damage with previously described p53 cancer mutational hotspots.

METHODS: DNA damage was quantified in the transcribed (TS) and non-transcribed (NTS) strands of the p53 gene in oral mucosa scrapings obtained from smokers and non-smokers using q-PADDA. DNA lesions were mapped using f-PADDA. The location of observed DNA lesions was compared with the location of known p53 mutations in head and neck cancer patients. Data were analyzed by t-test, Chi-square goodness of fit and exact nonparametric tests.

RESULTS: In smokers, we observed a significant increase in DNA damage in both p53 strands. The increase was higher in the NTS. This is consistent with the preferential repair of the TS and the higher prevalence of tobacco-induced p53 mutations on the NTS than on the TS. Our preliminary data show that in the oral mucosa of smokers 12 lesions/10,000 base pairs occur in p53 nucleotides frequently mutated in head and neck cancer, in contrast to only 0.6 lesions/10,000 base pairs in the oral mucosa of non-smokers.

CONCLUSIONS: We have shown for the first time that tobacco-induced DNA damage accumulates preferentially on the NTS of the p53 gene. Moreover, we were able to map DNA damage with high mutagenic potential before mutation fixation. These unique and important advantages of our approach suggest that PADDA has potential to establish biomarkers of susceptibility to tobacco-induced disease, which can guide preventive and diagnostic strategies.

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PODIUM PRESENTATION 3: WATERPIPE TOBACCO SMOKING

PA10-1 PREVALENCE AND HARM PERCEPTIONS OF HOOKAH USE AMONG YOUNG ADULTS IN THE UNITED STATES

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Hookah use has increased in United States in recent years, especially among young adults; one study found that 25% of young adults had ever used hookah. Studies suggest that the high prevalence of hookah use in this population may be related to their perception that hookah is less harmful than cigarettes. However, there remains a paucity of data on this topic. The purpose of this study is to (a) examine changes in prevalence of hookah use and (b) explore the relationship between harm perceptions of hookah and hookah use among young adults. Using a probability-based, nationally representative, online longitudinal cohort of 10,011 youth aged 15-21, we focused on those aged 18 to 22 (n = 5,807) to understand changes in hookah use and harm perceptions of hookah use at baseline (W1) and 6 months later (W2). We looked at: (a) percentage change in ever and current use of hookah and (b) harm perceptions of hookah smoking compared to cigarette smoking among current hookah users, ever hookah users (not current), and never users, using logistic regression models. At baseline, 29.0% of 18-to-22-year-olds reported ever using hookah; 6-months later, 35.1% reported ever using hookah. This represents a 21% increase in hookah use in 6 months. Furthermore, at baseline, 8.6% of this age group reported using hookah in the past 30 days; 6-months later, 10% reported using hookah in the past 30 days, representing a 15% increase in current use. When considering how harm perceptions at W1 impact hookah use at W2, we found that increased perceptions of hookah use as “more harmful” than cigarette use related to higher odds of never using hookah, compared to ever using or currently using (OR = 1.44, 95%CI 1.38 – 1.49). Additional analyses are in progress to examine differences in hookah use by race/ethnicity, income, and region. Hookah use seems to be on the rise among young adults and harm perceptions of hookah are associated with hookah use among this population. Future studies should examine how to change harm perceptions among this population in order to reduce their risk for initiation of hookah.

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PA10-2 TRENDS IN HOOKAH USE AMONG NEW JERSEY HIGH SCHOOL STUDENTS: 2008-2014

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BACKGROUND: Hookah tobacco smoking has gained popularity in the United States in recent years, particularly among youth and young adults. It is critical to understand patterns of hookah use over time, including demographic correlates of use. METHODS: This study utilizes repeated cross-sectional data from the 2008, 2010, 2012 and 2014 New Jersey Youth Tobacco Survey (NJYTS). The NJYTS is a representative survey of high school students in New Jersey; sample sizes range from 1,864 to 4,565. Ever hookah use was defined as smoking hookah on one or more days in the 30 days preceding the survey whereas frequent hookah use was defined as smoking on 20 or more days in the past 30 days. RESULTS: Hookah use grew among NJ high school students from 2008 to 2014. Ever use increased from 17.9% to 23.6% whereas current use increased from 9.7% to 11.8%. Of note, during this time period, current cigarette smoking dropped from 14.3% to 8.2%. In all years, current hookah use was significantly more prevalent among Hispanics relative to whites and Blacks, as well as among 12th graders relative to 9th graders; however, there were no significant differences by gender. Nearly 3 in 4 current hookah users reported current use of another tobacco product. Frequent hookah use was rare, with 1.7% of students in 2014 reporting use on 20 or more days in the past 30 days. Higher rates of frequent use were noted among Hispanics (2.4%) and males (2.6%). CONCLUSION: New Jersey first collected data on hookah use in 2008, when it was identified as an emergent product and a potential “fad.” The data here show that the popularity of hookah has persisted among young people, with notable differences among demographic subgroups. Moreover, in 2014, hookah was the second most popular currently used tobacco product, surpassing cigarettes for the first time in NJYTS history. To date, few policies or interventions have addressed hookah directly. Incorporation of hookah into youth access and smokefree indoor air laws is a necessary first step, but further research is needed to determine how best to intervene on hookah use in young people.

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PA10-3 COLLEGE STUDENTS’ PERCEPTIONS AND KNOWLEDGE OF HOOKAH USE

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INTRODUCTION. Hookah use is becoming increasingly prevalent, particularly among college students. Limited research indicates there are widespread misperceptions about the harms and health consequences of hookah smoking among college students. This study: 1) examined differences between college student current hookah users (i.e., past 30-day use) and non-users in their knowledge that hookah contains tobacco and nicotine; and 2) compared students’ perceived level of addictiveness and harm of hookah to cigarettes. METHODS. Participants were 5,482 18-29 year old students (M age=20.49; SD=2.36; 63.7% female; 36.4% non-Hispanic white, 31.1% Hispanic, 18.8% Asian, 8.8% African American/black and 4.9% other) attending one of 24 2- and 4-year colleges in Texas. Students completed an online tobacco survey in fall 2014/spring 2015, which included images of products and did not include any experiential samples. RESULTS. 17% of the sample used hookah in the past 30-days. Chi-square analyses indicated that a higher proportion of hookah users were female than male (p<.001), younger than older (18-24 vs. 25-29; p<.05), and racial/ethnic minority than non-Hispanic white (p<.05). Among the total sample, 27% incorrectly believed hookah does not contain tobacco and 38% incorrectly believed it does not contain nicotine. More hookah non-users than current users held this incorrect knowledge about tobacco in hookah (p<.001), but there were no between-group differences on knowledge about nicotine in hookah. Paired samples t-tests indicated that all students perceived a higher level of addictiveness (p<.001) and harm (p<.001) for cigarettes than they did for hookah. CONCLUSION. Almost one third of all college students held incorrect knowledge about tobacco in hookah and almost 40% held incorrect knowledge about nicotine. Students also rated cigarettes as more harmful and addictive than hookah. Since these misperceptions are held by both hookah users and non-users, universal college tobacco prevention programs should include messages to increase students’ knowledge regarding hookah use and correct these misperceptions.

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PA10-4
COLLEGE STUDENTS ARE INTRODUCED TO NICOTINE PRODUCTS THROUGH THE USE OF HOOKAH
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INTRODUCTION: Limited data exist on what young adults report as their first-ever nicotine product used; however, some evidence suggests that more young people appear to have their first experience with nicotine products through hookah smoking. This study reports on the first nicotine product used among a sample of college students across multiple institutions, and explores correlates of hookah as the first reported nicotine product used. METHODS: Participants included a convenience sample of undergraduate students (n=1664) enrolled at four universities in western and central New York State during the fall 2013 semester. Logistic regression models examined correlates of hookah as the first nicotine product ever used as well as factors associated with current hookah use. RESULTS: Among the 943 students who reported ever use of any nicotine product, 23% reported hookah as their first product used. Only combustible cigarettes (43%) were reported more frequently. Females, non-Hispanic blacks, and Hispanics were more likely to report hookah as the first nicotine product used. Nearly one-fifth (19%) of students surveyed reported current (past 30-day) hookah use. Those reporting current binge alcohol use, current and/or past-year marijuana use, current combustible cigarette use, current electronic cigarette use, and those self-identifying as Hispanic had higher odds of using hookah in the past 30 days. CONCLUSIONS: Among this sample of college students, not only was current hookah use relatively common (19%), hookah was the second most common nicotine/tobacco product initially used. Prevalence of hookah use among this age group may speak to a growing interest in, and use of, emerging/non-traditional tobacco products among U.S. youth. Monitoring young adults’ first nicotine product used, and understanding factors related to increased likelihood of hookah initiation and use, could assist in targeting prevention initiatives to reduce overall tobacco product consumption.
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PA10-5
THE IMPACT OF A BRIEF FEEDBACK CESSION INDUCTION INTERVENTION FOR TOBACCO WATERPIPE SMOKING
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Smoking tobacco from a waterpipe (WP) is increasing and is associated with many of the same negative health outcomes as cigarettes. Unfortunately, most users perceive WP to be less harmful and less addictive than cigarettes. The current study aims to evaluate the effectiveness of a brief personalized feedback and educational intervention in increasing knowledge of the harms of WP, motivation to quit WP, and decreasing WP use among WP bar patrons. Using a cluster randomized design, participants (N=109) were recruited as they entered WP bars and asked to complete a survey and carbon monoxide (CO) testing. Participants were randomized into assessment-only control (AOC; n=55) or feedback (FB; n=54) groups. Upon exiting the WP bar, the FB group received information about the harmful effects of WP and personalized feedback regarding their pre- and post-WP use CO levels. Both groups completed an exit survey at the end of their ad-lib WP session (end-of-treatment, EOT) and at 3 months post-baseline (3-Mo) assessing their WP use, perceptions, and knowledge. While the two groups reported similar responses at baseline for each of the items below (p>0.5), compared to AOC, those in the FB group perceived WP to be significantly more harmful at EOT (p<0.001) and 3-Mo (p<0.02), and reported a stronger commitment to quitting WP at EOT (p=0.045) and 3-Mo (p=0.04). The FB group responded correctly to a significantly greater number of knowledge-based questions at both EOT (p<0.0001) and 3-Mo (p=0.01) than the AOC. The FB group reported a greater increase in confidence in their ability to quit smoking WP from baseline to 3-Mo (p<0.01) than the AOC group (p=0.91). At 3-Mo, there were no significant differences between groups in terms of number of days in which WP was smoked or number of bowls smoked since EOT (p>0.05); 48% of AOC and 53% of FB participants reported no WP use over the past 3 months (p>0.05). The current study supports the use of educational and personalized feedback as a feasible intervention for improving knowledge, correct-
PA11-1
INSIGHTS INTO ELECTED OFFICIALS’ ATTITUDES AND BELIEFS ON TOBACCO POLICIES, TOBACCO 21
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INTRODUCTION: There is a paucity of research to inform tobacco control advocates about elected officials’ attitudes and beliefs on tobacco policies. The purpose of this study is to examine attitudes and beliefs of city or county elected officials about Tobacco 21, a policy to raise the minimum age of tobacco products from 18 to 21 years. This tobacco control policy has shown promise as a means to significantly reduce youth tobacco use initiation. METHOD: A multi-stage cluster sample of 66 local policymakers from 18 different states completed an online survey in 2015. The 34-item survey included questions about knowledge of the harms from tobacco products, prioritizations of tobacco control compared to other legislative issues, and beliefs of positive outcomes from implementing Tobacco 21 legislation. The Health Belief Model served as a framework to examine attitudes and beliefs towards Tobacco 21 by having the policymaker read news articles that highlighted social welfare versus civil liberties arguments. RESULTS: Most respondents, 91%, agree there are negative outcomes caused by smoking. Measuring how bad that death is, 46% did not believe that tobacco caused cancer, 11% did not believe that tobacco caused low birth weight, 10% did not believe tobacco caused stroke, and 8% did not believe that tobacco caused heart attacks. In relation to different policy areas faced by local officials, tobacco policy ranks 11 out of 12 as a priority. There is a correlation between knowing and time believing will be spent on Tobacco 21 policy (Spearman r = .51, p < .001). After reading a news article on the policy, 55% indicated there would be positive outcome from raising the sale age, but only 38% would be willing to vote in support of Tobacco 21. Almost equal portions were undecided (30%) or unsupportive (33%). A strong majority, 68 % believe Tobacco 21 will benefit the health of the community. Policymakers are equally divided in response to an item asking if they believe it is the responsibility of a policymaker to limit individual freedom in order to improve community health. CONCLUSION: Currently, local policymakers have limited awareness of the policy and many are undecided on their support for Tobacco 21. Strategies to increase the priority of effective tobacco control for a community are needed. This is an important time for health professionals to educate on the benefits of Tobacco 21 as a politically feasible policy with the direct outcome of implementation being a reduction in youth tobacco use initiation.

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PA11-2
ESCAPE ARTISTS? EXPOSURE TO WORKPLACE SMOKING BANS, DAILY SMOKING PATTERNS, AND CHANGING LOCATIONS TO SMOKE AMONG CIGARETTE SMOKERS
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BACKGROUND: Daily smokers are thought to strive to maintain blood nicotine levels above a certain threshold. Workplace smoking bans pose a substantial barrier to nicotine maintenance. Individuals may compensate for time spent in smoking-restricted environments by smoking more before or after work, or escaping bans to smoke, but this has not been quantitatively examined. METHODS: 124 smokers documented smoking occasions over 3 weeks using ecological momentary assessment (EMA), and provided information on stringency of workplace smoking policy (full, partial, or no bans). Generalized estimating equations assessed effects of workplace policy, time of day block, and weekday vs weekend on mean cigarettes per hour (CPH) and reports of changing location to smoke. Moderating effects of dependence as a framework to examine attitudes and beliefs towards Tobacco 21 by having the policymaker read news articles that highlight social welfare versus civil liberties arguments. RESULTS: Most respondents, 91%, agree there are negative outcomes caused by smoking. Measuring how bad that death is, 46% did not believe that tobacco caused cancer, 11% did not believe that tobacco caused low birth weight, 10% did not believe tobacco caused stroke, and 8% did not believe that tobacco caused heart attacks. In relation to different policy areas faced by local officials, tobacco policy ranks 11 out of 12 as a priority. There is a correlation between knowing and time believing will be spent on Tobacco 21 policy (Spearman r = .51, p < .001). After reading a news article on the policy, 55% indicated there would be positive outcome from raising the sale age, but only 38% would be willing to vote in support of Tobacco 21. Almost equal portions were undecided (30%) or unsupportive (33%). A strong majority, 68 % believe Tobacco 21 will benefit the health of the community. Policymakers are equally divided in response to an item asking if they believe it is the responsibility of a policymaker to limit individual freedom in order to improve community health. CONCLUSION: Currently, local policymakers have limited awareness of the policy and many are undecided on their support for Tobacco 21. Strategies to increase the priority of effective tobacco control for a community are needed. This is an important time for health professionals to educate on the benefits of Tobacco 21 as a politically feasible policy with the direct outcome of implementation being a reduction in youth tobacco use initiation.

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PA11-3
REGULATORY DOMAINS FOR E-CIGARETTES: A POLICY SCAN OF CITIES AND STATES
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BACKGROUND: Tobacco control policies are often pioneered by cities and towns, states and provinces years before federal governments. It is anticipated that regulation of e-cigarettes (and other alternative nicotine delivery products) will follow a similar policy evolution, with regulatory innovations being developed and enacted at the subnational level before adoption nationally. Hundreds of communities have passed laws/ordinances that restrict the use of e-cigarettes in certain environments, or set a minimum age for purchase. This policy scan sought to identify emerging regulatory approaches for e-cigarettes being adopted by subnational governments around the world. METHODS: A digital media surveillance system that captures tobacco-related news in multiple languages, Tobacco Watcher, was used to identify news articles (n=31,318) related to e-cigarettes with dates ranging from March 2016 to the present. Full text searches of the articles were conducted using variant search terms for city/state/province, e-cigarette, as well as policy/ ordinance/law, to identify jurisdictions that enacted policies related to: sale, advertising, promotion and sponsorship, distribution, importation, manufacture, taxation, and child safety. Once a jurisdiction was identified, original legislation was retrieved from city/state legislature websites and reviewed to extract key elements of these policies. RESULTS: From the media article scan the team identified 18 jurisdictions with e-cigarette regulations beyond vape-free and age-of-majority purchase rules. Other regulations identified after reviewing policies included regulations on packaging, expiration date, required printing of ingredients, prohibiting flavors, vendor licensing requirements, tax on e-liquid or on apparatus components, and prohibiting the use of these products in vehicles where minors are present. CONCLUSIONS: Subnational jurisdictions around the world are enacting a range of policies to regulate e-cigarettes including taxation, advertising and promotion, and product design. The results of this scan can be used to identify jurisdictions that would be valuable as case studies to explore the impacts of these new policies.

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PA11-4
A DECISION-THEORETIC MODEL OF THE PUBLIC HEALTH IMPLICATIONS OF E-CIGARETTE USE
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The impact of e-cigarette use on population health will depend on how it influences cigarette smoking: harm is increased if smokers vape to quit smoking or vape instead of smoking, but harm is increased if cigarette smokers delay cessation from smoking as a result of e-cigarette use or if individuals who would not have otherwise smoked initiate e-cigarette use and progress to smoking. At the population level, the net public health impact could range from beneficial to harmful. While it is essential to better understand the population health implications of e-cigarette use, data on use patterns, especially long-term use, is limited. In the absence of the needed data, modeling can provide the structure to analyze likely trends, the factors influencing trends, and the information needed to inform regulation.
This presentation describes a decision-theoretic model of the population impact of e-cigarette use on cigarette smoking. The likely health effects of the various behavior patterns of e-cigarette use are modeled in such a way to determine the conditions which need to be met for a net public health benefit. In particular, the model considers the trade-off between potential harm-reducing and harm-increasing effects of e-cigarette use. We show how the trade-off depends on the risks of exclusive and dual use of e-cigarettes, transitions to long-term use, and the expected patterns of cigarette use in the absence of e-cigarettes. Thereby, the analysis provides a method for gauging the likely public health impact of e-cigarette use based on the limited evidence, and is used to indicate the policies that are most likely to improve public health. The model shows the need for continued strong tobacco control policies directed at cigarettes and policies direct at e-cigarette use by youth. In addition to being a useful tool for gauging the impact of potential harm reduction alternatives, the model highlights the data needed to evaluate the public health impact of those products and provides a systematic method for applying that information as it becomes available.

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PA11-5
HYPOTHETICAL ATTRIBUTES OF ELECTRONIC CIGARETTES MODULATE BEHAVIORAL ECONOMIC DEMAND AND SUBSTITUTION

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Little is known about how demand for electronic cigarettes (e-cigarettes) is influenced by their perceived health risks, utility as a smoking cessation aid, or various regulatory conditions pertaining to their use. In the present study, existing cigarette smokers without e-cigarette experience on Amazon Mechanical Turk (N = 109) read hypothetical scenarios describing (1) relative harm from e-cigarettes (i.e., less harmful vs. as harmful as conventional cigarettes), (2) e-cigarettes' efficacy as a smoking cessation aid (i.e., helps vs. does not help people quit smoking), (3) governmental policy regarding the sale of flavored e-cigarette products (i.e., flavors are vs. are not allowed), and (4) workplace restrictions regarding e-cigarette use (i.e., allowed vs. not allowed indoors in the workplace). Participants were asked to assume these scenarios were true and subsequently completed two single-commodity hypothetical purchase tasks in which they stated the probability that they would purchase a single pack of conventional cigarettes or a disposable e-cigarette across increasing prices. Participants also completed a cross-commodity purchase task in which they stated the probability that they would purchase a pack of cigarettes across increasing prices or a price-constant disposable e-cigarette. Compared to their opposing conditions, demand for e-cigarettes was significantly higher when they were described as less harmful, useful as a smoking-cessation aid, were available in flavors, and were allowed indoors in the workplace, with similar effect sizes observed across scenarios. Conversely, describing e-cigarettes as less harmful than conventional cigarettes decreased demand for conventional cigarettes; however, this effect was not observed for the remaining three scenarios. Finally, describing e-cigarettes as either less harmful or useful as a cessation aid increased the degree to which e-cigarettes substituted for conventional cigarettes; this effect was not observed for the remaining two scenarios. In the presence of uncertainty regarding e-cigarettes, the present data suggest public perceptions of e-cigarettes and the methods in which they are regulated in the future will have large effects on initiation of their use. However, these effects appear somewhat stronger under conditions related to tobacco harm reduction.

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PA11-6
COST-EFFECTIVENESS OF A HEALTH SYSTEM-BASED POPULATION-LEVEL SMOKING CESSTATION PROGRAM

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BACKGROUND: Project CLIQ was a proactive population-outreach strategy using interactive voice recognition technology to connect low- to moderate-income smokers identified through an EHR-based registry with cessation counseling and medications, as well as social services aimed at managing stressors that impede cessation in this population. CLIQ was shown in a randomized trial to increase smoking cessation in a large private primary care system. We sought to evaluate the cost-effectiveness of CLIQ from the provider’s perspective. METHODS: We calculated the cost, cost per smoker, incremental cost per quit, and incremental cost per life year saved of the CLIQ system compared to usual care using cost and effectiveness data from the CLIQ randomized trial conducted from 2011-2013. Sensitivity analyses considered alternative effectiveness estimates, economies of scale, and initial versus ongoing costs. RESULTS: Over the 20-month period of the randomized trial, the program cost US$283,023 more than usual care in a population of 8,544 registry-identified smokers, 707 of whom participated in the program. In the base case (missing cessation outcomes coded as smokers), the cost per smoker was $33, incremental cost per quit was $4,077, and incremental cost per life year saved was $7,196. One-time costs constituted 28% of total costs over 20 months. Ongoing costs were dominated by personnel costs (71% of ongoing costs); medications, including dispensing and delivery accounted for 20%. Sensitivity analyses showed sharp gains in cost-effectiveness as the number of identified smokers increased because the large initial costs are spread over a greater number of smokers. When using multiple imputation to estimate effectiveness in the presence of missing cessation outcomes, the cost per quit was $2,778 and the cost per life year saved was $4,904. CONCLUSIONS: The CLIQ system is likely to be highly cost-effective by common standards compared to other health interventions. Cost-effectiveness will be greatest for health systems with high numbers of smokers and with high smoker participation rates.

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EXPERIENCES WITH AND INTEREST IN SMOKING CESSATION MODALITIES AMONG SMOKERS LIVING WITH HIV PARTICIPATING IN AN ONLINE SURVEY

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Smoking is disproportionately prevalent among persons living with HIV (PLWH) and is associated with significant morbidity and mortality. Cessation interventions among this population are needed, but relatively little is known about experiences with and interest in specific smoking cessation modalities among PLWH smokers. To address this gap, we recruited current cigarette smokers living with HIV from Amazon Mechanical Turk (MTurk), a crowdsourcing Internet marketplace. Eligible participants (n=271) completed a survey about experiences with smoking cessation and knowledge about smoking and nicotine. The majority (68.7%) of participants had made a quit attempt in their lifetime, and 88.9% of these said they had been able to quit for at least 1 day during one of their quit attempts. Lifetime, the three most popular smoking cessation aids/modalities included NRT (42.9%), “cold turkey” (29.1%), and behavioral methods (18.9%). Use of bupropion (4.7%) and varenicline (3.6%) was reported infrequently. Half (50.5%; n=137) of the sample reported being currently interested in quitting smoking; interest in quitting was associated with older age (aOR=5.55, 95% CI=1.12-27.43), daily smoking (aOR=0.45, 95% CI=0.26-0.77), and other tobacco use (aOR=1.90, 95% CI=1.07-3.36). Among those interested in quitting, the most favored cessation modalities were behavioral methods (59.8%), NRT (58.2%), and “cold turkey” (56.9%). Interest in using pharmacological (varenicline (27.0%); bupropion (26.3%) methods was low. Results from this work add to the growing literature regarding characteristics of PLWH smokers. Additionally, the low lifetime use of and interest in bupropion and varenicline underscore the need to increase interest in and uptake of gold standard pharmacological smoking cessation aids among this population.

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A PILOT TRIAL EXAMINING RACIAL DIFFERENCES IN RESPONSE TO ALGORITHM-GUIDED SMOKING CESSATION MEDICATION SELECTION IN PERSONS LIVING WITH HIV

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BACKGROUND: Algorithms-based treatments (AT) may be an effective clinical tool to aid HIV clinicians in prescribing pharmacotherapy to increase smoking cessation among people living with HIV (PLHIV). Initial results from AT indicated
significant increases in abstinence self-efficacy and medication utilization, and declines in cigarettes smoked per day across time. Given historical racial disparities, it is unclear if both African Americans and White smokers would benefit equally from this type of intervention. The aim of this study was to examine racial differences in response to AT guided smoking cessation for African American and White smokers living with HIV. METHOD: One hundred PLHIV smokers (n=100) were randomized to receive either AT guided smoking cessation or Treatment as Usual (TAU) which consisted of instructing participants to talk to a provider about assistance with smoking cessation when ready to make a quit attempt. RESULTS: Participants were predominantly African American (75%), males (71%) who had never been married. About 70% reported having a high school or higher education. Over half reported previous treatment for a mental illness (57%), while 69% reported previous substance use treatment. African Americans smoked fewer cigarettes and were more likely to smoke mentholated cigarettes compared to Whites at baseline. African Americans increased their use of other tobacco products (cigars/cigarillos) over time relative to Whites. A significant interaction between race and quit goal was observed, with Whites who reported complete abstinence as their goal having higher cessation rates, while African Americans who reported a goal other than complete abstinence demonstrating higher quit rates. CONCLUSIONS: The increased use of cigars/cigarillos during quit attempts as well as having a goal other than complete abstinence should be considered for designing interventions for PLHIV African American smokers.

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PA12-5
EXAMINATION OF THE RELATIONSHIP OF SMOKING AND ANXIETY TO MEDICATION ADHERENCE AMONG PEOPLE LIVING WITH HIV

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INTRODUCTION: Medication adherence is essential for optimal management of HIV among people living with HIV (PLWH). Physicians recommend ≥85% medication adherence to suppress the virus, yet many subgroups of PLWH (e.g., smokers, people reporting anxiety) have lower than the recommended adherence. This study examined the relationship between medication adherence and (1) number of cigarettes smoked per day (CPD), (2) smoking frequency (daily versus non-daily), and (3) anxiety symptoms in current smoking PLWH. METHODS: PLWH who reported current cigarette smoking were recruited from Center for Positive Living at Montefiore Medical Center. Participants completed questions about their smoking behavior, anxiety symptoms (PROMIS 8-item scale for anxiety; range=8-40); raw scores converted to normed t-scores for analyses), and medication adherence (Morisky Medication Adherence Scale: MMAS-8; range=0-8; lower scores reflect higher adherence). Correlation and logistic regression analyses were used to examine the relationships of medication adherence to continuous and categorical variables, respectively. RESULTS: Seventy-four participants completed the study (59.5% male; 53.8% Latino/a; Mean age=51.7±9.9; 31.1% of the sample reported high medication adherence (MMAS=0); 27.1% reported medium adherence (MMAS=1-2); and 41.8% reported low adherence (MMAS=3-8). Participants smoked an average of 9.4 CPD (SD=7.5). Overall, participants reported average levels of anxiety (raw scores; M=19.42, SD=9.58). There were no significant relationships between medication adherence and smoking frequency or CPD (ps>0.05). Higher anxiety symptoms were associated with lower overall medication adherence (Pearson’s r=0.31, p=0.01). Further, higher anxiety symptoms were associated with the report of stopping medication when feeling symptoms are under control (Wald=5.33, df=1, p=0.02) and feeling hassled about the treatment plan (Wald=6.69, df=1, p=0.01). CONCLUSION: Current smoking PLWH who reported greater anxiety symptoms reported poorer medication adherence than those who reported fewer anxiety symptoms. Anxiety may be a contributor to the poor medication adherence observed in PLWH smokers.

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PA13-1
IN VIVO NRT SAMPLING INCREASES MEDICATION ADHERENCE AMONG CRIMINAL JUSTICE SMOKERS: A PILOT STUDY

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BACKGROUND: Individuals in the criminal justice system demonstrate high rates of cigarette use (70-80%) and low adherence to smoking cessation medication. Our previous work suggested that prior use of a cessation mediation increases subsequent adherence, which in turn increases the likelihood of abstinence. Educational approaches to improve adherence have not been demonstrated to be effective in promoting cessation, yet nicotine sampling has boosted both medication use and cessation rates. The objective of the present study was to evaluate an In Vivo nicotine sampling approach to increase adherence. METHODS: We conducted a pilot study with 47 criminal justice smokers randomized to a 4-week intervention of either In Vivo nicotine sampling (IW1: patch; IW2: gum; IW3: combination NRT (cNRT); IW4: Review) vs. 4 sessions of standard smoking cessation with cNRT. Across each condition, all 4 sessions were 30 minutes in duration and conducted by undergraduate students, and participants in the In Vivo conditions were asked to abstain from smoking as long as possible prior to their sessions. RESULTS: During the In Vivo administration of NRT, total withdrawal severity significantly decreased from pre- to post-Session 1 (S1; In Vivo patch; 8.9 to 5.8, p=0.004), S2 (In Vivo gum; 9.2 to 7.4, p<0.001), and S3 (In Vivo cNRT; 7.5 to 5.8, p=0.002) compared to no significant decreases among Control participants. Similarly, craving was significantly reduced from pre- to post-session for the first three In Vivo sessions (all ps<0.05); whereas craving did not decrease for Control participants during sessions. Finally, at Week 4, significant differences were noted between In Vivo and control participants on medication adherence (using ≥50% of doses) to the gum (46.3% v. 12.7%; p<0.001) and patch (71.4% v. 54.6%, p=0.08). DISCUSSION: These results demonstrate that the In Vivo effects of NRT can be measured within 30 minutes, have the desired measurable effect of decreasing withdrawal effects and craving, and increase adherence relative to standard counseling sessions. Future studies are needed to determine if increasing medication adherence will result in increased cessation among smokers in the criminal justice system.

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PA13-2
SELECTION CRITERIA LIMIT GENERALIZABILITY OF SMOKING CESSATION STUDIES DIFFERENTIALLY ACROSS RANDOMIZED-CONTROLLED TRIALS AND LABORATORY STUDIES: A REVIEW ON VARENCLINe

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Strict selection criteria among randomized-controlled trials (RCTs) for smoking cessation may limit the generalizability of findings to the general population; however, laboratory-based studies (LBSs) that seek to understand the mechanisms/processes responsible for medication treatment outcomes may also be limited in their generalizability in two ways: recruiting smokers who (1) minimally represent the general population, or (2) markedly differ from those in RCTs. We reviewed empirical studies on the effects of varenclzine (v. placebo) among adult smokers and compared eligibility criteria and participant characteristics of RCTs (N=18) and LBSs (N=18) to nationally representative survey data (National Health Interview Survey, 2014) on daily U.S. smokers. Most studies reported excluding those who smoked fewer than 10 CPD, which resulted in eliminating approximately 27% of the daily-smoking population. RCTs commonly reported excluding for cardiovascular disease (15% eliminated from general pop.), COPD (%), cancer history (%), and renal disease (%). Less commonly reported exclusion criteria were hypertension (22%), liver disease (3%), and use of other tobacco products.
(8%). LBSs reported fewer specific exclusion criteria, though renal disease and diabetes (8%) were most frequently reported. Both study types frequently excluded for presence of a general medical or psychiatric condition, though it is unclear whether the proportion of the general population would be eliminated by the application of such criteria. In examining participant characteristics, both RCTs and LBSs were under-representative of Caucasians, p<.04, and recruited samples that began smoking at a younger age, p<.0001. Results suggest that selection criteria for smoking cessation studies limit generalizability in meaningful ways. Further, differences in selection criteria applied across study types may undermine efforts to translate research.

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PA13-3
SOME METHODOLOGICAL ISSUES IN EVALUATING THE EFFICACY OF ELECTRONIC CIGARETTES IN HELPING SMOKERS QUIT
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There are data that show that electronic cigarettes (EC) can help smokers reduce cigarette consumption as well as quit smoking altogether. The hard evidence however comes from only a handful of randomised trials and more are needed to increase confidence in the findings. In trials of smoking cessation medicines there is a relatively standard approach to examining efficacy. Smoking cessation trials are randomised to the investigational medicinal product or a placebo. Evaluation of EC is not as straightforward. When working on the Cochrane review and developing our own EC trials, we encountered a number of methodological issues: (1) Placebo comparator: Testing nicotine ECs against non-nicotine ECs presents a rather conservative paradigm because ECs provide nicotine as well as behavioural and sensory replacement for cigarettes. As both of these elements are likely to be active ingredients of EC effects, ‘placebo-controlled’ trials are in effect subtracting the sensoriomotor element from EC efficacy and reducing EC to just nicotine replacement. The effect then is fully dependent on nicotine delivery, when in fact a host of other EC features may be helpful or at least attractive for smokers as well. (2) Other comparators: Brief advice, waiting list control or a sham treatment are other options but these face the issues of client expectations and ethics. From the practical point of view, the key question is the efficacy of EC compared to existing treatments and such comparative studies are the priority at the moment. Another potentially useful and clean paradigm examines adding EC to standard treatments. Current treatments normally lack sensoriomotor components and EC may enhance their efficacy. (3) Choice of EC: Early trials used EC that delivered little nicotine. The risk of inefficient nicotine delivery is that people find little satisfaction and do not use it. In addition, the selected product may become obsolete by the end of the study, with better products appearing in the meantime. (4) Should a trial use just one EC product, or allow participants to choose? In real life, vapers usually try several products before finding one that fits their needs. Allowing participants choice may provide a better test of EC potential in real world than prescribing one product to all. (5) Length of use: most smoking cessation medicines are used for 8-12 weeks and then stopped. EC are normally used for ad-lib period and this may also be a factor contributing to their long-term efficacy, but it generates questions about comparative treatment durations. (6) Choice of outcome measures: Smoking cessation is of course the primary outcome, but smoking reduction has been used in some studies as a secondary outcome and this is justified by studies showing that ‘dual users’ reduced their intake of toxins. Self-reported reduction however poses problems with reliability and so it is important to include a biochemical verification. Given the unaided reduction is unlikely to generate health benefits, it is not clear how acceptable a genuine reduction in toxin intake is. We will illustrate some possible solutions to these issues by referring to the methodology of studies we reviewed for a Cochrane review and studies we are currently conducting.

Conflict of interest: McRobbie and Hajek have undertaken consultancy and received research Funding from manufacturers of smoking cessation medicines.

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PA13-4
PHASE 1 EVALUATION OF AN AUTOMATED PASSIVE DIFFUSION TRANSDERMAL INDIVIDUALIZED NICOTINE DELIVERY TECHNOLOGY FOR SMOKING CESSION
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INTRODUCTION: Chrono Therapeutics, Inc. (Chrono) has developed a wearable automated passive diffusion transdermal nicotine delivery technology for smoking cessation that generates a 3-peak nicotine blood plasma profile over the course of a day; it also includes adherence tracking and real-time behavioral coaching through a connected smartphone application. A second randomized, blinded, placebo controlled study will be completed in October 2015, this study will evaluate cravings. METHODS: This is a Phase I, open label, nicotine PK study in healthy Caucasian male volunteers who are smokers (n=12, [BMI] 20 to 30 kg/m², 18 to 50 years of age; >11 cigarettes per day). Nicotine was delivered using an engineering prototype at 0, 1, 6, 7, 12 and 13 hr. and blood samples collected over a 30 hour period. Immediately after the final nicotine delivery a skin irritation assessment was performed. RESULTS: A 3-peak nicotine blood plasma profile was observed (4 hr at 9.5±11.6 hr. and 13.4±8.7 hr. respectively. The mean t½max was 7.8±0.6 hr., which compared well with the published mean t½max for NicoDerm 21 mg transdermal patch. The mean t½ was 12.0±1.3 hr., (NicoDerm t½=3.8±1.3 hr.); Three (3) events of mild pruritus were assessed as related to the study system. There were no SAES, deaths, or study withdrawals due to an AE. Skin irritation assessment showed no evidence of either irritation or minimal erythema. CONCLUSION: Three ascending concentration peaks were observed and the AUCinf compared well with the published AUCinf for NicoDerm 21 mg transdermal patch as did the t½ Nicotine administration was well tolerated and minimal to no irritation was observed. Each of the AEs were mild or moderate in severity. There were no SAES, deaths, or study withdrawals due to an AE. JUSTIFICATION: This study indicates that the Chrono automated passive diffusion transdermal nicotine delivery technology is safe and can deliver nicotine transdermally in a manner that could provide nicotine levels at key points in the day that map to a patient’s cyclical peak cravings.

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PA13-5
EFFECTS OF MAINTENANCE VARECINILE ON RELAPSE IN THOSE WITH AND WITHOUT SCHIZOPHRENIA SPECTRUM AND BIPOLAR DISORDERS
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BACKGROUND: Despite effective pharmacotherapeutic cessation aids, relapse to smoking is common after initial abstinence, and effective relapse prevention interventions have not been identified. Relapse following discontinuation of maintenance pharmacotherapy is particularly prevalent and rapid among smokers with serious mental illness (SMI). Aim: To compare effectiveness of maintenance pharmacotherapy for relapse prevention in recently abstinent smokers with and without SMI. METHOD: To conduct a pooled analysis of two randomized, double-blind, placebo-controlled trials of maintenance varenicline and behavioral therapy for relapse prevention in smokers with and without SMI. RESULTS: There were significant effects of diagnosis, treatment, and a diagnosis by treatment interaction on point-prevalence abstinence at week 24. Those with SMI had reduced likelihood of abstinence; those on varenicline had increased likelihood of abstinence, and the impact of SMI diagnosis on abstinence differed by treatment. On varenicline, the odds of abstinence at week 24 did not differ between those with and without SMI (87.2±0.8% vs 81.9±0.8%, OR: 1.68, 95%CI:0.93,5.32, p=0.38). On placebo, the week-24 abstinence rate in those with SMI was less than half that for those without SMI (29.4±1.1% vs. 61.8±0.4%, OR:0.26, 95%CI:0.13,0.52, p=0.0002). There were significant differences in time to first lapse (X2df=9.452, p=0.112, 95%CI:non-est.) CONCLUSION: Among those assigned to maintenance pharmacotherapy, there was no difference between those with and without SMI in week-24 abstinence or time to first lapse.

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Conversely, among those assigned to maintenance placebo, those with SMI were more than twice as likely to relapse and relapsed more rapidly than smokers without SMI. Maintenance varenicline may help smokers with and without SMI to maintain long-term abstinence.

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PA13-7
THE RELATIONSHIP BETWEEN NICOTINE METABOLITE RATIO (NMR) AND SMOKING CESSION AMONG AN INTERNATIONAL COHORT OF SMOKERS IN FIVE COUNTRIES

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The nicotine-metabolite ratio (NMR) is a biomarker of the rate of nicotine metabolism, with higher NMR indicating faster metabolism. NMR has been found to be related to demographic characteristics and smoking behaviors such as amount smoked per day and success in quitting. This study examines differences in salivary nicotine among population-based samples of smokers in the US, UK, Mauritius, Mexico, and Thailand, and examines the relationship between NMR and spontaneous quitting. Participants come from International Tobacco Control (ITC) surveys conducted in 2010/2011. Follow-up surveys were conducted in each country in 2012/2013. The sample size is the 574 participants who completed both waves and provided a saliva sample. There was significant variation in NMR across countries (p<0.001), with the US having the highest mean NMR (0.42) and Thailand the lowest (0.26). Those who reported continuing to smoke at follow-up had a mean NMR of 0.32, compared to a mean NMR of 0.42 in participants who reported quitting (p<0.001). Those who reported quitting had quit more than 6 months prior to the survey and had the highest mean NMR value (0.44, p=0.007). Quitters had a higher NMR (0.42) compared to those who made a failed quit attempt (0.31) and those who made no attempt (0.33) (p=0.005). In a multivariate logistic regression model treating NMR as a continuous variable and quitting vs. smoking as the outcome, smokers with a higher NMR were more likely to quit than those with a lower NMR (OR=2.67; 95%CI:1.25-5.68). Overall, within and across all five countries, NMR was positively associated with quitting: smokers with a higher NMR were more likely to quit at follow-up, suggesting that faster metabolizers were more successful in quitting. There was no significant interaction by country (p value here). These results stand in opposition to reports in clinical trial samples, where slower metabolizers (those with lower NMR) tend to show better quit outcomes.

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PA13-8
DEVELOPMENT AND TESTING OF A COMPUTERIZED DECISION SUPPORT SYSTEM TO FACILITATE BRIEF TOBACCO CESSATION TREATMENT IN THE PEDIATRIC EMERGENCY SETTING

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BACKGROUND: Tobacco smoke exposure (TSE) is unequivocally harmful to children, yet up to 48% of children who visit the pediatric medical education setting are exposed to tobacco smoke. The incorporation of clinical decision support systems (CDSS) into the electronic health records of patients may improve rates of brief TSE intervention of caregivers. OBJECTIVE: To develop and iteratively refine a CDSS to show pediatric nurses how to educate, motivate, and assist their patients' caregivers to quit smoking. METHODS: A mixed-methods design was used to develop, refine, and integrate an evidence-based CDSS into the pediatric urgent care setting. We conducted focused interviews and user groups of RNs to develop and refine the CDSS. The CDSS has prompts to: 1) ASK about child TSE and caregiver smoking, 2) Use a free software program to ADVISE caregivers to reduce their child’s TSE, and 3) ASSESS interest in quitting and ASSIST caregivers to quit. We assessed the demographics; smoking history; and perceived attitudes, barriers, and practice related to screening and counseling by the RNs in the focus and user groups. RESULTS: The 20 RNs were all female and Caucasian; average age (SD) was 37.20 (9.16) years old; 75% had never smoked. Eleven (55%) reported that they screened for tobacco use and encouraged caregivers to quit. Six (30%) reported that they wanted to learn how to help caregivers quit; 7 (35%) reported that RNs should advise caregivers to quit. We created the CDSS to reflect RNs' suggestions and preferences. Examples included: placing the screening question in the navigator after a child complaint, generating a “Best Practice Advisory” to let the RN know that cessation education was advised if the caregiver was a smoker, and options to complete the counseling immediately or to place a “Remind me Later” order to complete the counseling at a later time. We assessed usability of the CDSS with 10 RNs. RNs reported that the CDSS was easy to use (mean=4.1) and would be very useful in helping to address smoking with caregivers (mean = 4.5). RNs reported that using the CDSS would likely fit into their workflow (mean = 3.9) and that they would be likely to use it daily (mean = 4.2). CONCLUSIONS: We created an innovative CDSS designed to facilitate the provision of evidence-based TSE reduction and cessation counseling to caregivers by RNs. Additional results from the focus and usability testing, plus data from a pilot screening trial will be presented.
PA13-9
DOES EFFECTIVENESS OF ADOLESCENT SMOKING-cessation
INTERVENTION ENDURE INTO YOUNG ADULTHOOD? 7-YEAR
FOLLOW-UP RESULTS FROM A GROUP-RANDOMIZED TRIAL

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BACKGROUND: The Hutchinson Study of High School Smoking was the first randomized trial to show effectiveness of a smoking cessation intervention on 6-months prolonged abstinence at one-year post-intervention in a large population-based sample of adolescent smokers. This study examines whether such positive early results from teen smoking cessation intervention can endure into young adulthood in the absence of additional intervention. METHODS: High school smokers (n = 2,151) were proactively recruited into the trial from fifty randomly selected Washington State high schools randomized to the experimental (Motivational Interviewing + Cognitive Behavioral Skills Training telephone counseling intervention) or control (no intervention) condition. These smokers were followed to 7 years post high school, with 81.5% participation in data collection, to ascertain rates of prolonged smoking abstinence in young adulthood. All statistical tests are two-sided. OUTCOME MEASURE: The main measure of long-term abstinence was six-year prolonged smoking abstinence. Results: No evidence of intervention impact at seven years post high school was observed for the main endpoint of six-year prolonged abstinence, neither among all smokers (14.2% in the experimental group vs. 13.1% in the control condition, difference = +1.1%, 95% confidence interval (CI) = -3.4 to 5.8, p = .61), nor among the subgroups of daily smokers and less-than-daily smokers, nor among other a priori subgroups. But, observed among males was some evidence of an intervention impact on progress toward quitting. CONCLUSIONS: There was no evidence from this trial among adolescent smokers that positive effectiveness for smoking abstinence, observed previously one-year after high school from the proactive telephone intervention, was sustained for the long term into young adulthood. In light of positive short-term effectiveness consistently observed from this and other trials for teen smokers, sustained interventions that continue into young adulthood should be developed and tested for long-term impact.

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PA14-1
SYSTEM CHANGES TO IMPLEMENT JOINT COMMISSION GUIDELINES FOR TREATING TOBACCO USE AMONG HOSPITALIZED PATIENTS

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BACKGROUND: In 2012 the Joint Commission (JC) implemented new Tobacco Cessation Performance Measures for hospitals. Informed by results of a 2012 Cochrane review, the JC expanded previous measures to mandate delivery of evidence-based counseling and medication for all admitted tobacco users during hospitalization and at discharge. This is the first study to evaluate strategies for implementing the new inpatient components of the measure. METHODS: The study was conducted in two acute care hospitals in NYC. The interventions were aimed at improving two of the new JC inpatient measures, % eligible patients who received pharmacotherapy and % eligible patients who received counseling (during hospitalization). To efficiently extract the outcome data, an interdisciplinary group of experts mapped the elements that comprise the tobacco measures to discrete documentation in the electronic health record (EHR). Data was analyzed from 4871 smokers discharged between 12/12 and 3/15 to evaluate the impact of two interventions implemented in two stages. The first was an EHR modification to prompt and require providers to prescribe pharmacotherapy. The second was the introduction into the EHR of a nursing counseling/education module automatically applied to all smokers. We estimated the relative odds of a patient being prescribed medication in the provider intervention period compared to the baseline time period and the relative odds of a patient receiving smoking cessation counseling in the nurse intervention period relative to the baseline period. We estimated the odds ratios using generalized estimating equation (GEE) models with a binomial distribution to account for potential clustering related to the specific type of hospital service, while controlling for gender, age, race, and hospital service. RESULTS: The proportion of patients receiving medication was unchanged after about 25% to over 75% following the integration of the counseling module in the EHR. When controlling for demographics and hospital service, the odds of receiving counseling increased 10-fold after the nurse protocols and related EHR changes were implemented. CONCLUSION: Findings demonstrate the limitations of IT solutions alone in changing provider behavior to achieve compliance with JC guideline recommended care. The success of the nurse-focused intervention suggests an effective tool for integrating the counseling component of the new measures and the importance of nursing’s role in achieving JC targets for tobacco use treatment for hospitalized smokers.

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PA14-2
USING LEAN TOOLS TO INCREASE EVIDENCE-BASED TOBACCO USE TREATMENT IN HOSPITALIZED NEUROSURGERY PATIENTS

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INTRODUCTION: Despite recommended clinical guidelines, clinics and hospitals underutilize treatment for tobacco use, indicating a need for innovative ways to increase evidence-based care. LEAN, a set of quality improvement (QI) tools used increasingly in healthcare settings, can help streamline processes and create buy-in for use of best practices. To date, nothing has been published regarding use of LEAN tools in tobacco use treatment. We report findings from a 12 month QI project using LEAN tools to implement tobacco use treatment on an inpatient neurosurgery service. METHODS: A resident physician and tobacco treatment specialist developed an inpatient nicotine replacement therapy (NRT) and counseling protocol for all neurosurgery patients who indicated current tobacco use. A multidisciplinary group devised strategies to implement and monitor fidelity to the protocol. Rates of provider prescription of NRT and provider referrals to tobacco treatment...
counseling were compared pre- and post-intervention. A patient satisfaction survey was administered on the day of discharge. RESULTS: Prior to protocol implementation, 21% of neurosurgery patients who used tobacco were referred for tobacco treatment counseling. Following implementation, referrals increased to 45% and further to 76% after LEAN methodology was used to engage all stakeholders. Rates of inpatient NRT prescriptions increased from 12.5% to 21% to 23%. Greater than 85% of those responding to the patient satisfaction survey (N=33) believed that the consult either decreased or had a neutral impact on their stress level during hospitalization. More than 50% reported increased satisfaction with overall hospital stay because of the consult. CONCLUSION: LEAN tools can dramatically and effectively increase use of best practice tobacco use treatment in hospitalized inpatients. This project demonstrates an innovative model for clinicians and researchers who seek to improve delivery of evidence-based tobacco treatment in healthcare settings. These findings may be particularly helpful to inpatient surgical departments, as these providers sometimes have reservations about prescribing nicotine replacement therapy.

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**PA14-3 PHYSICIANS’ KNOWLEDGE, BELIEFS, AND PRACTICES REGARDING E-CIGARETTES: RESULTS FROM A NATIONAL SURVEY OF U.S. PRIMARY CARE PHYSICIANS**

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OBJECTIVE: To understand the extent to which PCPs report e-cigarette discussions and recommendations as well as their knowledge and beliefs regarding e-cigarettes and how these influence their propensity to recommend e-cigarettes to their adult patients who smoke. METHODS: We used a modified Dillman approach to administer a mailed survey to a national random sample (N=1430) of office-based primary care physicians (PCPs) between February and May 2015. We compared PCPs who recommend and do not recommend e-cigarettes. RESULTS: 348 PCPs returned the survey for a 29% response rate. 82.7% of eligible PCPs (n=220) reported previously discussing e-cigarettes with their patients and 57.8% (n=155) reported previously recommending e-cigarettes to their patients who smoke. The majority reported recommending them for smoking cessation and harm reduction (71.5%, n=111), 10.2% for smoking cessation only, and 9.6% for harm reduction only. PCPs’ knowledge regarding e-cigarettes, particularly potential harms, was low, but beliefs regarding e-cigarettes ability to help in quitting smoking and to help limit secondhand smoker exposure to others, decreasing cancer risk and the perception that e-cigarettes offer a relative harm reduction tool compared to other tobacco products was high. Patients’ interest in using e-cigarettes (odds ratio=1.31, 1.09-1.58) and the PCP having favorable beliefs regarding e-cigarettes ability to help in quitting smoking (odds ratio=1.80, 1.45-2.24), to limit secondhand smoke exposure for others (odds ratio=1.45, 1.15-1.83), to reduce harm compared to other tobacco (odds ratio=1.11, 1.05-1.16), and deter patients from using conventional cessation medications (odds ratio=0.78, 0.64-0.95) were associated with PCPs’ reports of previously recommending e-cigs to their patients who smoke LIMITATIONS: Having a low response rate limit ability to generalize beyond sample. CONCLUSION: Results illustrate an opportunity to improve PCPs’ e-cigarette-related knowledge while their practice is still developing. The impact of improving PCPs’ knowledge on their recommendations is unknown. However, once their practice is established it is difficult to change.

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**PA14-4 CHARACTERSISTICS AND MOTIVATION TO QUIT SMOKING IN PATIENT WITH CANCER IN PRIMARY CARE SETTINGS**

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BACKGROUND: Patients with cancer who quit smoking have better outcomes and reduced risk of second cancers. Some of them receive cessation treatment in cancer centres. In primary care settings, many practitioners do not intervene because the intervention appears futile. Therefore, we analyzed patients with a lifetime and current history of cancer enrolled in a smoking cessation program in their primary care setting. SETTING: 280 primary care sites with rostered patients including family health teams, community health centres and nurse practitioner led clinics participating in the STOP Smoking Program between 2011 and 2015 where smokers were eligible to receive up to 28 weeks of free NRT and counseling by their primary care team. RESULTS: A total of 55096 patients enrolled in the STOP Program between 2011 and 2015. At baseline, 607 patients reported current treatment for cancer and 22 subsequently died within 1 year of enrollment indicating fairly advanced stages of cancer. The mean age was 60.1 years, 40% male, mean confidence in ability to quit was 7.4/10 and importance of quitting was 9.3/10. They smoked on average 19.75 cigarettes per day, with no more than 2 previous quit attempts in the previous year. They received on average 187mg of total nicotine (patches, gum, inhaler, and lozenges) per week indicating combination or high dose therapy. There was no difference between those who died and those who did not during the period of observation. The 3 and 6 month quit rates will be reported and compared to the cohort without cancer enrolled in STOP. CONCLUSION: Smokers with cancer do seek treatment for their tobacco addiction in primary care settings and appear to be highly motivated to quit. A small proportion enroll even when faced with less than a year survival. Further studies are needed to better understand their motivations to quit and determine if patients with end stage cancer have any benefit from quitting smoking.

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**PA14-5 FACTORS ASSOCIATED WITH PRIMARY CARE PHYSICIANS’ INTENTION TO RECOMMEND E-CIGARETTE USE TO THEIR ADULT PATIENTS WHO SMOKE**

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OBJECTIVE: Assess and compare the factors influencing PCPs’ intent to recommend e-cigarette use for patients with different tobacco use profiles. METHODS: Using a modified Dillman approach, we administered a mailed survey to a national random sample (N=1430) of office-based primary care physicians (PCPs) between February and May 2015. Survey content and our conceptual model were informed by existing literature and qualitative research. Paired t-tests were used to compare PCPs’ recommendation intention for different patient types. M-Plus with full information likelihood estimation was used to test our conceptual model, and to identify the factors associated with PCPs’ intentions of recommending e-cigarette use to patients with different tobacco use profiles. RESULTS: We had a 29% response rate. The overall mean physician recommendation intention was 16.7 (±3.01) for patients with end stage cancer have any benefit from quitting smoking. The main predictor variables in our conceptual model were all significantly associated with PCPs’ intentions in addition to PCPs’ knowledge (R²=0.54, p<0.01). PCPs’ intentions were varied by patient type. LIMITATIONS: There is a potential for response bias which limits the ability to generalize beyond the sample. CONCLUSION: PCPs’ intent to recommend e-cigarettes to their adult patients who smoke is strongly influenced by PCPs’ beliefs as well as PCPs’ consideration of patients’ interest in using e-cigarettes and their tobacco use profile. The impact of PCPs’ practice is not ascertained; however, it could potentially have negative consequences on the health of their patients un-
less e-cigarettes turn out to be an effective cessation aid and/or harm reduction strategy. Future research should examine e-cigarettes harms and benefits regarding different tobacco use profiles to accommodate PCPs’ perceptions and practice setting challenges.

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PODIUM PRESENTATION 4: AMERICAN INDIAN AND ALASKA NATIVE TOBACCO CONTROL AND TREATMENT

PA15-1
DZIL NAT’OH IS THE TRADITIONAL HEALER’S TOBACCO: THE HISTORY, IMPACT, AND ROLE OF CULTURALLY RELEVANT POLICIES TO CURB THE USE OF COMMERCIAL TOBACCO IN THE NAVAJO CEREMONIAL SETTING

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Navajo traditional healers have long regarded dzil nat’oh as a sacred plant for the Navajo people—a gift from Diyiin Diné (the holy people or deities) that spiritually connects them to the Navajo people through songs, prayers, and ceremonial practices. Yet, the use of commercial tobacco in and around Navajo ceremonial settings has become more commonplace. Specifically, commercial tobacco is sometimes mixed with dzil nát’oh or non-commercial herb during the ceremony and or smoked socially by ceremony participants before and after the ceremony.

OBJECTIVES: The NCI-funded “Networks Among Tribal Organizations for Clean Air Policies (NATO CAP)” partnered with the largest Navajo traditional healer association to understand the history, role, and impact of the use of commercial tobacco during the ceremonial setting and the recent attempts by traditional healers to control the use of commercial tobacco through policy. METHODS: Through digital story telling and oral history techniques Navajo researchers conducted 15 interviews with Navajo traditional healers representing distinct tobacco-based healing ceremonies.

RESULTS: A series of educational vignettes were developed to communicate traditional healers perspectives on the influence of commercial tobacco dating back to WWII and the cultural revitalization and preservation policies required to challenge and curb the use of commercial tobacco during the ceremonial setting and in everyday life. CONCLUSION: The use or replacement of commercial tobacco for non-commercial herb tobacco during the ceremony and the social use of commercial cigarettes may increase exposure to second hand smoke among Navajo people and require policies respectful of religious and cultural protocols.

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PA15-2
CORRELATES OF MENTHOL CIGARETTE USE AMONG AMERICAN INDIAN SMOKERS IN MINNESOTA

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INTRODUCTION: Despite substantial progress in reducing the overall prevalence of smoking nationally, significant disparities in commercial tobacco use persist among American Indian and racial/ethnic minority populations. Much attention has been given to the disproportionate use of menthol cigarettes by some groups and its relationship to increased burden of tobacco-related disparities, yet few studies have examined the use of menthol cigarettes by American Indians. The primary aim of this study was to provide an overview of menthol smoking prevalence and related sociodemographic and smoking variables for a representative sample of American Indian adults in Minnesota. METHODS: Data from the Tribal Tobacco Use Project, conducted between 2010 and 2012 in Minnesota, were examined (n=2628). Participants were asked to report whether they usual brand of cigarettes was a menthol or non-menthol brand. Weighted multivariate regression models were used to examine associations between menthol cigarette use and sociodemographics, smoking and quitting behaviors and related beliefs. RESULTS: Approximately 30 percent (95% CI=26.3%, 33.2%) of American Indian adult smokers in Minnesota used menthol cigarettes. Younger and female American Indians were more likely to report usually smoking menthol cigarettes (p<0.05) than older and male respondents. Participants in urban areas were almost three times as
likely to be menthol smokers as their rural counterparts (aOR= 2.88 [2.06, 4.01]). CONCLUSION: Menthol use among American Indians in Minnesota was higher than among the general population. Further data collection is needed to monitor patterns of menthol use among all American Indian and racial/ethnic minority populations. Understanding the patterns of menthol cigarette use can be useful in developing interventions designed to prevent and reduce commercial tobacco use for American Indian communities.

Reporting: ClearWay Minnesota

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PA15-3
TOBACCO USE PATTERNS AND QUITLINE UTILIZATION IN AMERICAN INDIAN AND ALASKAN NATIVE PATIENTS ACROSS 14 STATES
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American Indians and Alaskan Natives (AIAN) have the highest smoking rates (40.1%) of any racial/ethnic group in the United States, and the most difficulty quitting. Historical trauma, racial bias, and cultural insensitivity combine to make AIAN individuals reluctant to utilize the available services. One of the more successful treatment modalities for tobacco cessation is telephonic quitlines, which offer education, support, phone coaching, and nicotine replacement therapy. We report data from the largest nonprofit provider of quitline services, operated by National Jewish Health, which serves 14 U.S. states. We examine how AI/AN callers (n=5,957, 3.5% of total sample) differ from their counterparts who identify as other racial/ethnic groups (n=164,524). The intake assessment provided data on demographics, tobacco use and treatment history, and participation in the quitline cessation program. The proportion of women callers was slightly higher in the AIAN group (61.5%) than in the non-AIAN group (58.9%). Among callers who reported no college education, AIAN (31.9%) were less likely than non-AIAN (37.5%) to have achieved a GED or high school diploma. The groups were comparable in age, marital and parenting status. However, AIAN callers were more likely to live with another tobacco user (45.4% vs. 42.1%). AIAN callers reported an earlier age of onset of smoking (mean=15.9 years) than non-AIAN callers (mean=16.7 years), but the number of cigarettes smoked per day was similar across groups. Non-cigarette tobacco use, which was most commonly reported for smokeless tobacco, cigars, and E-cigarettes, was more common among AIAN callers (11.9%) than non-AIAN callers (9.1%). In both groups, callers reported an average of 6 previous quit attempts, and approximately 60% reported previous use of cessation medications (most often nicotine patch). Following enrollment in the quitline services, AIAN callers more commonly dropped out of the program before the first coaching call (9.7% vs. 8.0%). Results suggest AIAN callers do not differ substantially from their non-AIAN counterparts, but may be less likely to take full advantage of the services that quitline offers.

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PA15-5
AMERICAN INDIAN/ALASKA NATIVE CIGARETTE SMOKING AMONG YOUTH AND YOUNG ADULTS
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PURPOSE: describe recent trends in American Indian/Alaska Native (AIAN) cigarette smoking among young and young adults. We analyzed data from the National Survey on Drug Use and Health (NSDUH) collected from 2002 to 2013. NSDUH is a national representative survey of the U.S. population. From 2002-2013, NSDUH interviewed 6,571 AI/ANs aged 12-25 years. METHODS: the following NSDUH question was used to measure current smoking: “During the past 30 days, on how many days did you smoke a cigarette?” Uptake of smoking was measured by the following questions: “Did you first smoke part or all of a cigarette in the current year or the previous year, and: “Have you smoked at least 100 cigarettes in your entire life?” Weighted national smoking prevalence and smoking initiation estimates were calculated by age, sex, family income, and time period.

RESULTS: the prevalence of past 30-day cigarette smoking was higher among AI/ANs than among all other racial/ethnic groups. Among AI/ANs smoking prevalence increased by age, from 8% among 12-14 year-olds to 52% among AI/ANs aged 22-25 years. Prevalence was higher for AI/AN female compared with male youth but was lower for AI/AN female than for male young adults. The incidence of 1st smoked a cigarette was slightly higher for white than AI/AN youth. Among young adults aged 18-25 years, the incidence of 1st smoked a cigarette was much higher for the AI/AN population. Among both AI/AN youth and young adults, the incidence of 1st smoked a cigarette decreased over time for young adults. The increased rates of 1st smoked a cigarette were most dramatic among AI/AN males aged 18-21 years. Among AI/AN women aged 18-25 years, the incidence of 1st smoked cigarettes daily more than doubled from 2002-2007 (2.1%) to 2008-2013 (4.9%). CONCLUSIONS: AI/AN youth and young adults had higher smoking prevalences and higher initiation rates than other races. We found an increase in smoking uptake among AI/AN women. There has been a shift in initiation from younger adolescents to older adolescents and young adults.

Funding: Centers for Disease Control and Prevention

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PA15-4
RACIAL AND ETHNIC DIFFERENCES IN WHAT SMokers REPORT PAYING FOR THEIR CIGARETTES
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OBJECTIVES: Smoking rates and tobacco-related health problems vary by race and ethnicity. Higher tobacco prices are associated with decreases in tobacco initiation and consumption. We aim to explore whether smokers from different racial and ethnic groups report paying different prices for cigarettes, and the extent to which consumer behaviors influence any observed differences. METHODS: We used data from a national sample of 23,300 smokers from the 2010-2011 Tobacco Use Supplement of the Current Population Survey to calculate average reported cigarette pack prices for each of six racial and ethnic groups. Using multivariate regression models, we analyzed the independent effect of race and ethnicity on reported price paid, and whether these effects changed once indicators of carton purchasing, menthol use, Indian reservation purchase and state market prices were incorporated. RESULTS: Non-Hispanic Blacks, Hispanics and non-Hispanic Asians reported paying $0.42, $0.68 and $0.89 more per pack of cigarettes than non-Hispanic Whites, respectively. After accounting for higher rates of carton purchasing among non-Hispanic Whites, which is associated with lower per pack prices, and menthol use among non-Hispanic blacks, which is associated with higher per pack prices, these gaps shrank to $0.26, $0.27 and $0.28 respectively. Additionally, although non-Hispanic American Indians report paying low prices similar to non-Hispanic Whites, this appears due to higher rates of purchasing on Indian reservations, which was associated with an average savings of a $1.48 a pack. CONCLUSIONS: Reported prices paid for cigarettes vary based on the racial or ethnic group of the consumer, in part due to differences in product type purchased and purchase location. Policies aimed at minimizing the per pack price gap between packs and cartons, or raising pack prices on Indian reservations may reduce price variation between some racial and ethnic groups. Other contributors to racial and ethnic price differences, including local market conditions, deserve additional exploration.

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PODIUM PRESENTATION 4:
E-CIGARETTE TOXICITY

PA16-1
GENERATION OF NANOPARTICLES BY ELECTRONIC CIGARETTE

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There is an ongoing discussion of electronic cigarette (e-cig) as potential safe (or less harmful) alternative to combustible cigarette products. Recently published data show that level of tobacco smoke biomarkers is significantly lower among e-cig users in comparison with smokers of combustible cigarettes. Due to the different principle of operation (e-cig utilizes resistively heated wire to vaporize nicotine, not combustion of organic matter) levels of most harmful or potentially harmful constituents (HPHC) inherent to cigarette smoke should be lower in e-cig aerosol. At the same time the heated wire may produce toxic compounds in a more dangerous form, i.e., attached to smaller particles known as nanoparticles (NP). NP greater surface area per unit mass compared to larger-sized particles of the same chemistry renders NP more active biologically. Therefore the toxicoplastic impact of HPHC and other chemicals that are attached to NP may be higher than for submicron particles. We studied e-cig aerosol using an advanced real time technique that can measure a wide range of particle size (5-1000 nm) and concentration (up to 9 orders of magnitude). Tests performed on both cigalike and tank-style e-cigs have shown that, along with submicron particles typical of cigarette smoke, e-cigs generate high concentrations of NP. NP concentrations reached 10^6 particles per mL at count median diameter of 12-25 nm. The highest concentration of NP was observed at the beginning of each puff. Tests conducted on a tank-style e-cig with no e-liquid showed that only NP were generated under these conditions. These data suggest that the resistively heated wire itself can generate metal NP, similarly to a glowing wire NP generator. Analysis of e-cig aerosol collected on filters showed a variety of metals (Cr, Ni, Cu, Sn and Zn) with some concentrations varying by several orders of magnitude. But metals may not be the only source of NP. Repeated exposure of e-liquid to the heated wire may lead to formation of other compounds that could contribute to NP formation. Although mass concentration of NP could be significantly lower than submicron particles, toxicological effects could be high.

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PA16-2
DETECTION OF ACRYLONITRILE AND ACRYLAMIDE IN AEROSOL FROM ELECTRONIC NICOTINE DELIVERY SYSTEMS

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SIGNIFICANCE: Electronic nicotine delivery system (ENDS) products are marketed as a safe alternative to tobacco cigarettes. While nicotine solutions used in ENDS are often free of toxicants or contain only traces of impurities, when heated, they can undergo chemical reactions to form new byproducts which may be toxic when inhaled. Acrylonitrile (AN) and acrylamide (AM) are probable carcinogens, and have been previously reported in tobacco smoke. We hypothesized that AN and AM can be generated from flavored nicotine solution in propylene glycol (PG) or vegetable glycerin (VG), respectively, during operation of ENDS. METHODS: We tested aerosol generated from an NJOY Smooth (4.8V, 2.8Ω, 8.2W) tank ENDS, refilled with nicotine-containing (24mg/ml) 50/50 PG/VG based solution with the following flavors: cola, cheese cake, vanilla malt, orange, strawberry and coffee. Aerosol was generated from each flavored solution using a smoking machine with the following puffing protocol: 60ml puff, 3sec duration, 15sec interval, 10 puffs per set, 10 sets. The aerosol was trapped on a Cambridge filter (particulates) and sorbent tubes (vapors; coconut shell charcoal for AN and silica gel for AM). AN and AM were extracted from filters and sorbent tubes using methanol or ethyl acetate, respectively, and analyzed by gas chromatography (GC-NPD). RESULTS: AN and AM were not detected in any sample generated from flavored products when ENDS devices were operated in lower voltage. However, when the voltage was increased to 4.8V, AN was detected in aerosol of the following flavors: cheesecake, cola, orange and strawberry. In high voltage settings, AM was detected in aerosol of cheesecake, orange and strawberry flavors. CONCLUSIONS: Our study confirmed previously reported findings that toxicants are generated from nicotine solutions when ENDS are overheated. Future research is needed to evaluate whether ENDS users can be exposed to AN and AM when these products are operated in real-life settings. Product safety standards are needed to prevent overheating of nicotine solutions inside ENDS devices to avoid generation of dangerous byproducts.

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PA16-3
TOWARDS A PROGNOSTIC MODEL OF NICOTINE DELIVERY FROM ELECTRONIC CIGARETTES: COMPARISON OF MEASURED PLASMA NICOTINE LEVELS TO PREDICTED NICOTINE EMISSIONS FOR 35 INDIVIDUAL ECIG USE SESSIONS

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INTRODUCTION: Electronic cigarettes (ECIGs) electrically heat and vaporize a liquid solution to produce an inhalable aerosol. Depending on such ECIG variables as electrical power, liquid composition, and puff behavior, ECIG users can extract in a few puffs far more or far less nicotine than from a conventional combustible cigarette. Understanding how these and other variables relate to nicotine delivery is a central challenge for product regulation. In this study we tested the possibility of using a physics-based mathematical model of the ECIG aerosolization process to predict blood-level nicotine exposure in ECIG users. The model accounts for the heating and cooling of the ECIG liquid during and between puffs, the thermodynamic properties and composition of the liquid, the transfer of vapor to the air passing through the ECIG, and geometric features and electrical power input to the ECIG. METHODS: Seventeen current nicotine users used an ECIG that was loaded with 1 ml of a 70% propylene glycol/30% vegetable glycerin liquid in four independent sessions that differed by nicotine concentration (0, 8, 18, or 36 mg/ml). Blood was sampled regularly for plasma nicotine concentration and puff topography was recorded continuously. The recorded puff topography data, liquid composition, and ECIG device characteristics were then input into the mathematical model to compute nicotine yield for every individual ECIG use session. The computed nicotine yield was then compared to the measured plasma nicotine (area under the curve). RESULTS: We found that plasma nicotine was well correlated with computed nicotine yields (r=0.61, p<0.001). CONCLUSION: This finding demonstrates that with knowledge of a few ECIG device characteristics and user puff topography, nicotine delivery can likely be predicted reliably and rapidly, and that mathematical models may provide a useful tool in the product regulation armamentarium.

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PA16-4
EVALUATION OF NICOTINE, CARBON MONOXIDE, AND TOTAL NNAL IN CIGARETTE SMOKERS AND SECOND AND THIRD GENERATION E-CIGARETTE USERS
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Laboratory studies of e-cigarette (EC) aerosols suggest that they have a much more favorable toxicological profile than cigarettes; however, there are concerns that newer e-cigarette products may deliver higher levels of harmful constituents under certain conditions. The purpose of the current study was to assess the actual uptake of select constituents among a group of exclusive cigarette smokers, and of exclusive vapers of second generation (G2: ego style tank system) and third generation (G3: rebuildable tanks/atomizers) products. Constituents assessed included salivary nicotine (metabolite of nicotine), total NNAL (a metabolite of the lung carcinogen NNK), and exhaled carbon monoxide (eCO; a cardiovascular toxicant). Thirty participants (M=33.8 years, 63% male) completed study procedures. For EC users, eligibility criteria included self-report of not using any other tobacco/nicotine product and using the same style of EC device for the last 3 months. Smokers had to report only smoking cigarettes and no other tobacco/nicotine product over the last three months. G2 users (n=9) reported vaping for an average of 2.2 years and using a mean e-liquid concentration of 18.8mg/mL (SD=9.7). G3 users (n=11) reported vaping for an average of 3.0 years and using a mean e-liquid concentration of 4.3mg/mL (SD=3.0). Smokers (n=10) reported smoking 19 cigarettes/day for an average of 21 years (SD=11). Average eCO levels (ppm) were significantly higher in smokers (M=13.9, SD=11.1) than in G2 (M=2.3, SD=1.0, p<0.001) or G3 users (M=3.4, SD=1.2, p<0.001). Average urinary total NNAL levels (pmol/mL) were also significantly higher in smokers (M=1.47, SD=0.82) than in G2 (M=0.17, SD=0.19, p<0.01) or G3 users (M=0.21, SD=0.47, p<0.01). However, no differences emerged between smokers, G2 or G3 users in terms of exposure to nicotine (p>0.05). Together these findings suggest that although vapers’ uptake of nicotine from newer generation EC devices is similar to the levels of exposure from cigarettes, which may have implications for addiction and their viability as a substitute for smoking, they deliver significantly lower levels of a potent lung carcinogen and cardiovascular toxicant.

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PA16-5
TOBACCO TOXICANT EXPOSURE IN CIGARETTE SMOKERS WHO USE OR DO NOT USE OTHER TOBACCO PRODUCTS
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Cigarette consumption in the US has decreased alongside an increase in use of other tobacco products (OTP; little cigars, cigarillos, blunts, regular cigars, hand-rolled cigarettes, pipes, smokeless tobacco, hookahs, electronic cigarettes). Despite a public perception of lower risk, the tobacco toxicant profile of OTP is not well understood. This study examined urine total nicotine equivalents (TNE) and NNAL, biomarkers of nicotine and carcinogen exposure, respectively, in smokers who used cigarettes only (Cig) compared to smokers who used cigarettes in combination with OTP (Cig+OTP). 100 Cig subjects enrolled in an ongoing smoking cessation trial were randomly selected based on age, gender, and race/ethnicity to serve as matched controls to a convenience sample of 100 Cig+OTP users. At baseline, all subjects reported past 7-day use of cigarettes and OTP and provided urine for biomarker analysis. Due to the matched design, subjects in both groups were mostly male (65.0%), non-Hispanic Black (75.0%), and > 40 years of age (51.0%). All Cig (100%) and 95% of Cig+OTP reported daily use of cigarettes (>25 days per month); 34% of Cig+OTP reported daily use of OTP. No difference was found in mean cigarettes per day (CPD) in Cig versus Cig+OTP (13.9 vs 14.3, p=0.75). Cig+OTP used an average of 1.6 other tobacco products, mostly little cigars/or/cigarillos (100%), blunts (56.0%), and hand-rolled cigarettes (40.0%), resulting in higher total tobacco product use per day in Cig+OTP versus Cig (17.7 vs 13.9, p=0.01). Despite equivalent CPD and higher total tobacco product use, median TNE (25.8 vs 61.0 nmol/mg creat) and NNAL (250 vs 419 pg/mg creat) were lower in Cig+OTP (p=25 days per month, n=66) versus nondaily (0.05 for both biomarkers). We present one of the first comparisons of tobacco toxicant exposure in cigarette smokers who use and do not use OTP suggesting that nicotine intake from OTP reduces nicotine intake from cigarettes, resulting in reduced tobacco carcinogen exposure. Larger replication studies are needed.

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PA16-6
ACTIVATION OF CHEMOSENSORY RECEPTORS AND RESPIRATORY IRRITATION RESPONSES BY ELECTRONIC CIGARETTE FLAVORANTS AND VAPORS
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The physiological effects and potential toxicities of flavor additives in electronic cigarettes remain poorly understood. Among electronic cigarette users minty, fruity, vanilla and cinnamon flavors are highly popular. Flavor ingredients in these vapors include menthol (mint), carvone (spearmint), methyl salicylate (wintergreen), linalool (fruity), vanillin (vanilla) and cinnamonaldehyde (cinnamon). In addition to acting as flavorants some of these compounds are known to elicit respiratory irritation and inflammation and may chemically react with tissue constituents. In some electronic cigarette fluids the content of flavorants is very high, possibly exceeding concentrations sufficient to elicit irritant effects and inflammation in the respiratory system. Especially users of cinnamon flavored electronic cigarette fluids reported adverse respiratory effects and burning sensations, raising concern about the potential toxicity of some flavorants in electronic cigarette liquids. The effects of dilutions of flavored electronic cigarette fluids on the cloned human sensory irritant receptors, TRPV1 and TRPA1, were examined by fluorescent calcium imaging in HEK293 cells. Cinnamon-flavored solutions strongly activated TRPA1 and TRPV1 receptors, even at high dilution factors. Carvone- and methyl salicylate-containing solutions also activated these receptors. These effects occurred also with nicotine-free flavored solutions. Minty flavor solutions activated the cold/menthol receptor, TRPM8, known to suppress respiratory irritation. In mice, plethysmography experiment showed that electronic cigarette vapors activate respiratory irritation responses, characterized by increases in the time of breaking and lowered respiratory rates. Vaporized polyethylene glycol, one of the major solvent constituents of electronic cigarette liquid, also produced respiratory irritation in mice. Taken together, these data show that flavorants in electronic cigarette fluids activate sensory irritant receptors in vitro and respiratory irritation in vivo. Smokers switching to electronic cigarettes likely prefer high concentrations of flavoring compounds. Some of these compounds are known to elicit respiratory irritation in vivo and respiratory irritation in vitro. Smokers switching to electronic cigarettes may have a higher risk concentrations of flavorants since their effects mimic the sensory impact of irritants in tobacco smoke. However, while flavorants are generally recognized as safe for oral consumption, inhalation of flavorants may promote chronic respiratory irritation, inflammation and exert other toxic effects.

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PODIUM PRESENTATION 4: YOUTH AND NICOTINE USE

PA17-1

ADOLESCENTS' RESPONSE TO NICOTINE DOSE IN CIGARETTES: PRELIMINARY EVIDENCE FROM A WITHIN-SUBJECTS LABORATORY STUDY

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With the 2009 passage of the Family Smoking Prevention and Tobacco Control Act, the Food and Drug Administration (FDA) acquired regulatory jurisdiction over tobacco products, including the authority to reduce levels of nicotine in cigarettes. Reducing the nicotine content of cigarettes to a non-addictive level could dramatically reduce smoking rates in the US. The legislation has the potential to impact the pattern of cigarette smoking over the lifetime, making cigarettes less reinforcing for young people, and thus decreasing the number of teens who go on to become lifelong smokers. However, little is known about the effects of reduced nicotine content cigarettes in adolescents. The aim of the current project is to determine how reduced nicotine content cigarettes may affect adolescent smoking behavior. Following overnight abstinence, adolescent daily smokers (ages 15-19, current n=17, projected n=50) reported on their craving, withdrawal and positive and negative affect pre- and ad lib smoking of one cigarette in the laboratory. Four doses of nicotine (0.03 mg, 0.07 mg, 0.28 mg and 0.8 mg) were administered via research cigarettes in counter-balanced order across sessions. Paired t-tests comparing change in score from pre- to post- smoking were conducted, as well as MANOVAs evaluating the effect of dose on difference scores calculated from pre- to post- smoking. Preliminary results indicated that all four nicotine doses significantly reduced abstinence-induced craving (as measured by the QSU, all p’s <.001), withdrawal (as measured by the MNWS, all p’s <.001) and negative affect (as measured by the PANAS negative affect scale, all p’s <.06). However, these effects were not significantly dose-dependent on any measure. These data indicate that acute exposure to reduced nicotine content cigarettes, even those with very low nicotine content, are effective at reducing abstinence-induced effects in adolescent daily smokers. Overall, the results from this project will help determine how reduced nicotine content cigarettes may affect real-world smoking behavior in adolescent smokers. Such knowledge will contribute to the science base that may inform future policy decisions.

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PA17-2

TOBACCO PRODUCT POLY-USE AMONG CIGARETTE USING ADOLESCENTS: AN INCREASING TREND, UNITED STATES 1999-2013

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BACKGROUND: Trends in individual tobacco product use may obscure patterns in multi-product use, which is common among young tobacco users. We evaluated trends in multi-product use with cigars or smokeless tobacco (ST) among adolescent cigarette users in the U.S. Youth Risk Factor Behavior Surveillance System (YRBSS) and compared smoking intensity according to multi-use behavior.

METHODS: The YRBSS biannual surveys include nationally representative samples of 9th-12th grade students and have assessed cigarette, cigar, and ST use since 1999. In this analysis, tobacco use was defined as using ≥1 day of the product. For males (1999: 16.4%, 2013: 27.4%) and more than tripled for females (1999: 1.7%, 2013: 6.0%). In all years, male poly-tobacco users were more likely than male cigarette-only users to have begun smoking by age 13, smoke cigarettes daily in the past month, and smoke ≥10 cigarettes per day, but less likely to try to quit cigarettes. Female multi-users (sparse cells precluded reliable estimates for poly-users) similarly smoked more intensely than female cigarette-only users.

CONCLUSIONS: U.S. youth tobacco use has declined, but those who do use cigarettes are more likely to use multiple tobacco products, which is associated with more intense smoking. Tobacco control efforts must address the changing dynamic of multi-product use by youth, particularly as more tobacco products enter the market.

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PA17-3

E-CIGARETTE USE AS A PREDICTOR OF COMBUSTIBLE TOBACCO PRODUCT USE AMONG OLDER ADOLESCENTS IN SOUTHERN CALIFORNIA

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BACKGROUND: Adolescent use of e-cigarettes has increased exponentially in recent years, and there is concern in the public health community that e-cigareette use may lead to subsequent use of cigarettes. A recent longitudinal study found that among never-smoking 9th grade students, those using e-cigarettes were more likely to initiate use of cigarettes in the next year. However, no studies have yet reported on whether e-cigarette use among older adolescents will increase the likelihood of combustible tobacco product use, a particularly salient question around the time of transition to age 18 when tobacco products may be legally purchased.

METHODS: The current analysis uses prospective data from the Southern California Children’s Health Study (CHS) to evaluate whether adolescents using e-cigarettes in 11th/12th grade (at baseline) are more likely to report use of combustible cigarettes in the next year (at follow-up). Data on combustible and alternative tobacco product use (including use of e-cigarettes) was initially obtained in 2014; follow-up data was obtained approximately one year later. The current analysis includes participants surveyed at baseline with no prior history of combustible cigarette use, who completed a follow-up questionnaire prior to September 1, 2015 (N=631). RESULTS: Among adolescents with no history of cigarette use, those who reported ever use of e-cigarettes in 11th or 12th grade were 4.91 times (95%CI: 2.94, 8.22) as likely as those who had never tried e-cigarettes to initiate use of cigarettes in the next year. This association was robust to restriction to never users of any combustible product at baseline. CONCLUSIONS: Use of e-cigarettes in 11th or 12th grade among cigarette-naive youth greatly increased the likelihood of subsequent cigarette and other combustible tobacco product use. However, it is unclear whether e-cigarettes are acting as a gateway to combustible products, particularly as adolescents transition to an age at which purchase of cigarette products is legal, or whether e-cigarette use is simply delaying the onset of cigarette smoking in those who would have gone on to use cigarettes anyway.

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PA17-4
COMPARING THE EFFECT OF NICOTINE VERSUS PLACEBO ELECTRONIC CIGARETTES ON SMOKING REDUCTION AMONG YOUNG ADULT SMOKERS

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INTRODUCTION: Electronic cigarette (EC) use is growing dramatically with use highest among young adults and current smokers. One of the most common reasons for using ECs is interest in quitting or reducing cigarettes per day (CPD); however there are few randomized clinical trials on the effect of ECs on smoking abstinence and reduction. METHODS: We conducted a two-arm, double-blind randomized controlled pilot study. Subjects were randomized to receive 3-weeks of either disposable 4.5% nicotine EC (intervention) or placebo EC. The primary outcome was self-reported reduction of ≥50% in the number of CPDs smoked at week 3 (end of treatment) compared to baseline. Study subjects (n=99) were young adult (21-35), current smokers (smoked >10 CPDs) living in NYC. Results: Over 50% of participants were Hispanic and/or Black. There were no baseline differences in demographic characteristics or smoking behavior across the two groups. Compared with baseline, a significant reduction in CPDs was observed at all study time periods (1, 3, and 12 weeks) for intervention (≥50% reduction in CPDs at the end of treatment. CONCLUSION: A sample of young adult smokers was able to significantly reduce CPDs (≥50%) with the help of ECs and sustain the reduction over 12 weeks. Further study is needed to establish the role of both placebo and nicotine containing ECs in increasing both reduction and subsequent cessation.

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PA17-5
FREE, EASY, AND EFFECTIVE: HOW YOUNG ADULTS USED THE NICOTINE PATCH AND TO WHAT EFFECT

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BACKGROUND: To support smoking cessation among young adults, Leave The Pack Behind (an Ontario government-funded tobacco control initiative) established an age-tailored social marketing campaign and online ordering system providing 8 weeks of free nicotine patches or gum to young adults who meet eligibility criteria and agree to complete 3 research surveys. This study examines young adults’ use of free patches, and smoking and quitting outcomes. METHODS: From September 2013 to November 2014, 6,237 of 21,891 individuals visiting the website met eligibility criteria and completed baseline measures. 2,100 young adult smokers (age=24.5, CPD=16.4 (SD=8.7)) ordered patches and were sent an 8-week supply, instructions, an age-tailored quit booklet, and 8 support emails. Product use and behavioural outcomes were assessed 8 weeks and 6 months after registration, with 441 (21%) completing both assessments. RESULTS: At 8-week follow-up, 7% of participants reported using patches daily for the full 8 weeks; 20% were still completing the 8-week treatment; 29% had ended treatment prematurely; and 44% used the patch non-daily or not at all. At 8-month follow-up, 33% had quit smoking (30-day continuous abstinence). Average time smoke-free was 118.3 (62.4) days. (ITT quit rate was 9.4%). Controlling for demographics and past tobacco use, odds of quitting were higher for participants who had used (OR=3.26, CI=1.44, 7.36) or were still using (OR=1.96, CI=1.14, 3.37) the patch daily for the prescribed 8-week period (compared to ending treatment prematurely (OR=0.93, CI=0.55, 1.56) or using patches incorrectly). Among the 294 non-quoters, 91.5% tried to quit, with 63.6% remaining smoke-free for ≥ 1 week and 24.9% for ≥ 1 month before relapsing. CPD decreased from 15.5 to 11.1 (p < .001). DISCUSSION: Young adults are accustomed to the ease and immediacy of online transactions. Providing cessation medication via an age-tailored online platform appears to be an appealing and effective way to promote abstinence and reduction among young adults. Adherence to treatment is crucial to achieve optimal outcomes. The impact of email, text, or phone support should be explored.

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POD IUM PRESENTATION 4: TOBACCO USE AND WEIGHT MANAGEMENT

PA18-1
CIGARETTE SMOKING AND ABDOMINAL OBESITY IN FINNISH MEN AND WOMEN: A POPULATION-BASED STUDY

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BACKGROUND: Smokers, independent of degree of obesity, are at increased risk of metabolic disorders such as type 2 diabetes independent of degree of obesity. These may be due to excess abdominal obesity but the relationship between smoking and abdominal obesity is complex. OBJECTIVE: The objective was to examine the relationship between cigarette smoking, overweight and abdominal obesity in Finnish population-based cohort of 1732 men and 1930 women. METHODS: Total of 3,662 participants aged 25-74 years from the DILGOM 2007 study were analyzed. Participants filled in a questionnaire and attended a health examination including anthropometric measurements. Participants were categorized into twelve groups according to body mass index (BMI) (normal vs. overweight) and by smoking status (never smokers, recent quitters, former, occasional, light daily and heavy daily smokers). The obese (BMI >30 kg/m²) participants and pregnant women were excluded. Abdominal obesity was measured as waist circumference (WC) the cut-off for elevated WC being ≥94 cm for men and ≥80 cm for women. The associations between each smoking-weight group and abdominal obesity were analyzed by logistic regression analyses with normal weight never smokers as the reference category and with adjustments for age, physical activity and alcohol consumption. RESULTS: Among overweight men, in the adjusted models the overweight daily heavy smokers (OR=53, 1, 95% CI 26, 5-106, 4) and the overweight former smokers (OR=55, 6, 95% CI 21, 6-58, 6) had a higher risk for abdominal obesity compared to normal weight never smokers, but also when compared to overweight never smokers (OR=26, 95% CI 16-42; p-value for OR difference <0.05). In women, the risk did not significantly differ by smoking status either in normal or overweight groups. CONCLUSION: Our data suggest that smoking status enhances the impact of overweight on abdominal obesity in men. Among overweight men daily heavy smoking poses an excess risk for abdominal obesity. RECOMMENDATIONS FOR PRACTICE: Excess risk for abdominal obesity associated with heavy daily smoking together with overweight should be taken into account in clinical practice when considering metabolic and cardiovascular risk.

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PA18-2
A COMPARATIVE ANALYSIS OF DIETARY ADEQUACY AMONG SMOKING, SMOKELESS, AND DUAL TOBACCO USER HOUSEHOLDS IN BANGLADESH

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Evidence suggests smokers on average have less adequate diet as compared to non-smokers. Several studies have reported noticeable dietary differences such as lower intake of fish, fruits and vegetables for smokers. While the majority of the studies are from the developed countries, less is known about the differences in dietary intakes among the developing countries where malnutrition is a major public health challenge. Additionally, the effect of smokeless- and dual-tobacco use on dietary intakes are unknown. We are evaluating and comparing dietary intakes using the nationally representative Household Income Expenditure Survey (HIES-2010) from Bangladesh. Dietary data were collected for 14 days and comprised of 7 visits with two days recalls. The questionnaire included a comprehensive list of both ethnic and regional specific foods. Overall, 71% of the households reported positive expenditure on any form of tobacco (i.e. smoking and/or smokeless), and were considered tobacco users. Out of 12240 households, 2061 used smoking tobacco only (16.8%), 3284 used smokeless tobacco only (26.6%), and 3348 were dual-users (27.4%). Our preliminary results suggest that mean per capita daily intake of vegetables (340.5 ± 134.6 vs. 353.0 ± 159.2 g/day; p < 0.005), milk and dairy (38.6 ± 69.5 vs. 48.3 ± 79.8 g/day; p < 0.0001), and fish (26.5 ± 45.7 vs. 70.8 ± 43.7 g/day; p < 0.0001) were significantly lower among any tobacco users compared to non-users. However, mean per capita daily intakes of total calories (2935.0 ± 934 vs. 2812.0 ± 907 kcal/day; p < 0.0001) was higher among any tobacco users as compared to non-users. We will conduct food group analyses and evaluate dietary diversity among smoking-, smokeless-, and dual-tobacco user households. The project will provide evidence to support policy recommendations for addressing malnutrition burden among tobacco-user households in a developing country like Bangladesh. Addressing the issue of tobacco use in relation to malnutrition would make tobacco control a higher priority for developing countries for achieving the Millennium Development Goal 1 and post-2015 development agenda of eradicating extreme poverty and hunger.

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PA18-3
ARE MENTHOLATED CIGARETTES CONNECTED WITH OBESITY?

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OBJECTIVES: To investigate whether smoking of mentholated cigarettes is associated with dietary intakes, body mass index, and weight modifications among people living with and without HIV. SETTING: A single site study where 393 adults were consecutively enrolled into one of four groups based on smoking and HIV serostatus (HIV+ smoker, HIV+ non-smoker, HIV- smoker and HIV- non-smoker). Primary Outcome Measures and Plausible mediators: Establish differences in markers of obesity (body mass index, waist/hip ratio (WHR) and the Waist Circumference) along with potential mediators such as dietary intakes, brain derived neurotropic factor and IL-6. RESULTS: The prevalence of overweight was 35% and obesity was present in 38% of the study sample. Both HIV+ and HIV- smokers of mentholated cigarettes had a significantly higher BMI when compared to users of regular cigarettes (29.78 ± 7.15 vs. 27.18 ± 5.46, p<0.04; HIV+:30.79 ± 8.23 vs. 29.01 ± 5.2; p=0.02). Our results suggest that the addition of menthol to cigarettes may be a biological trigger associated with regulation of appetite for sweet-food, and vulnerability to obesity in both HIV+ and HIV- individuals. By increasing IL-6, menthol can also alter lipid and glucose metabolism and thus the odds of obesity. A better understanding of the biological effects of flavors, such as menthol, in tobacco products and their implications for health conditions such as obesity are urgently needed.

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PA18-4
DESIGN AND IMPLEMENTATION OF A COMBINED TOBACCO CESSION AND WEIGHT MANAGEMENT INTERVENTION IN QUITLINES

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BACKGROUND: Two thirds of treatment seeking smokers are obese or overweight and have significant concerns about gaining weight. While most smokers gain a modest amount of weight when they quit, some gain over 30 pounds. Systematic reviews of efficacy trials demonstrate that combined tobacco and weight interventions can improve cessation and limit weight gain. Population based effectiveness studies are needed to confirm these findings. In this presentation we describe the feasibility and acceptability of offering combination treatment in a real-world setting. The Best Quit Study is a 3-armed RCT testing tobacco cessation alone (control) or combined with simultaneous or sequential weight management delivered by tobacco quitlines. Specifically, we adapted two existing technology-supported phone/web-based treatments into an integrated 10 call intervention, including, mailed materials and two web-based programs. RESULTS: Among 5073 eligible adult smokers who called a quitline, 4280 (84.4%) were interested in the study and 2540 were randomized (50.2% of eligible). Compared with individuals eligible but not randomized, those randomized were significantly more likely to have a chronic disease (34.5% vs 41%; p<.05), and more addicted (first cigarette<5min: 20% vs 48%, p<.05) but did not differ on age, gender or BMI. Randomized groups were balanced on age, marital status, percent dieting, BMI, weight concerns and confidence, but the sequential group smoked more than the simultaneous group(18.7 vs 17.4 cpd; p<.05). Attrition was higher in the simultaneous group than control (7.5% vs 4.4%; p<.05). Recruitment and retention processes and challenges will be discussed. DISCUSSION: Results indicate that combined treatment was acceptable to quitline callers (evidenced by finding that >50% enrolled in the study) and feasible to implement (evidenced by finding that >40% completed 3+ calls). Combining weight management with cessation is an innovative method to meet the needs of quitline callers, two thirds of whom are concerned about weight gain. If effective, combined treatment could have a major impact on the population prevalence of smoking cessation and excess weight.

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PA18-5
THE DILEMMA OF ACCESS TO CARE AND QUITTING SMOKING IN A SURGICAL WEIGHT LOSS PROGRAM

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INTRODUCTION: Surgical weight loss (SWL), (i.e., gastric bypass, band or vertical sleeve gastrectomy), is an effective treatment for extreme obesity that can improve or resolve a number of serious medical conditions (diabetes, hyperepididymia, hypertension, obstructive sleep apnea). To reduce the risk of post-operative complications SWL programs often require tobacco users to quit which may create a barrier to access to care. The purpose of this study was to determine if tobacco use is a barrier to completing the Penn State SWL Program. METHODS: Retrospective chart review was conducted on 236 randomly selected patients who were accepted into the program (BMI ≥ 35 and significant medical conditions) in 2013. Patients completed a questionnaire to determine medical appropriateness prior to being accepted. “Completers” attended 5-6 dietary and psychological visits. Tobacco users who were required to quit who were confirmed with blood cotinine. Tobacco use status (cigarettes or chew), height and weight, and demographics were self-reported. Chi square and t-tests were used to determine statistical differences between current tobacco users (TU) and non-users (NTU). Logistic regression identified predictors of program completion (yes/no). RESULTS: Overall, the sample was 79% female, 83% white, had a mean age of 42, and a mean BMI of 49. 42% of the population had at least a college education. 17% (n=41/236) reported using tobacco and most were cigarette smokers (15%, n=35, mean of 13 cigarettes per day). 39% of TU achieved abstinence (16/41). TUs were less likely to be female (66% TU v. 81% NTU, p=0.08) and were significantly less likely to complete the SWL program (39% TU v. 64% NTU, p=0.003). Logistic regression identified TU as a predictor of non-completion (p=0.004) after adjusting for gender, education level and race and use of previous psychological counseling. DISCUS-
PODIUM PRESENTATION 4: NICOTINE DEPENDENCE AND BRAIN

PA19-1

EFFECTS OF CHRONIC NICOTINE TREATMENT AND TERMINATION ON NICOTINE SELF-ADMINISTRATION

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Although nicotine replacement therapy is commonly utilized in clinical practice, there is scant information regarding the modulation of nicotine self-administration in laboratory animals by chronic nicotine exposure. The present study was conducted to address this question by characterizing the effects of continuous nicotine dosing on the reinforcing effects of intravenous (IV) nicotine in non-human primates. Adult rhesus macaques (N=3) first were trained to respond for food pellets and, in a separate component of the daily 100 min session, IV injections of nicotine (0.01 mg/kg) under a fixed ratio (FR) 1 schedule of reinforcement. After self-administration of nicotine became stable, subjects were implanted with an osmotic mini-pump containing a nicotine solution; the daily dose of nicotine (1.0 – 3.2 mg/kg/day) increased in ascending order every 7-14 days. Finally, the effects of removing minumps (discontinuation) on nicotine self-administration was evaluated. Results indicate that baseline self-administration of 0.01 mg/kg/inj ranged between about 35 – 59 inj/90 min in the three subjects. Averaged results show that chronic nicotine treatment decreased self-administration of 0.01 mg/kg nicotine in a dosage-dependent and sustained manner. The highest dosage (3.2 mg/kg/day) decreased daily nicotine intake to approximately 50% of control values. Follow-
ing the discontinuation of nicotine treatment, IV nicotine self-administration first increased to approximately 150% of previous control values, then gradually (over the course of a week) returned toward baseline levels. No effects on food-maintained responding were observed at any point during or after chronic nicotine treat-
ment. These data show that chronic nicotine treatment dose-dependently and -
selectively decreases the reinforcing effects of nicotine, and that the discontinuation of treatment may lead to sharp increases in nicotine intake.

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PA19-2

ACTIVATION OF ALPHA6BETA2 SUBUNIT CONTAINING NICOTINIC ACETYLCHOLINE RECEPTORS IN THE NUCLEUS ACCUMBENS SHELL PROMOTES NICOTINE REWARD

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Nicotine, a primary addictive component of tobacco, binds to nicotinic acetylcho-
line receptors (nAChRs) to exert its effects. An accumulation of evidence suggests that beta2 subunit containing nAChRs (beta2* nAChRs, * denotes other subunits may be present) regulate nicotine reward and reinforcement. However, less is known regarding the subunit make-up of beta2* nAChRs that regulate these be-
haviors. beta2* nAChRs can be divided into two major sub-classes based upon their sensitivity to alpha-conotoxin MII (alpha-CTX MII). Unlike alpha-CTX MII in-
sensitive alpha6beta2* nAChRs, which are ubiquitously expressed throughout the brain, alpha6beta2* nAChRs are more selectively ex-
pressed in catecholaminergic nuclei, including the ventral tegmental area (VTA) and on VTA dopamine (DA) projection terminals in the nucleus accumbens shell (NAbs). Using Pavlovian place conditioning, the overarching goal of these studies was to investigate the contributions of alpha6beta2* nAChRs to nicotine reward. Gain of function mice with a single point mutation in the M2 pore-opening region of the alpha6 nAChR subunit (LS) were compared to wildtype (WT) littermates on a C57BL/6J background using 0, 0.01, 0.03 and 0.1 mg/kg i.p. nicotine. In vitro studies showed enhanced VTA DA neuron firing and DA release of LS compared to WT mice. In the present study we observed that LS mice exhibit enhanced nicotine conditioned place preference (CPP) and at a lower dose of nicotine than observed in WT mice (p<0.05). Genotype did not affect contextual fear condition-
ing, suggesting that this effect was specific to nicotine reward. Further, we observed that selective antagonism of NAs alpha6beta2* nAChRs with alpha-CTX MII blocked LS-PPI in WT mice (p<0.05), without impairing contextual fear conditioning. Together, these studies suggest that ac-
tivation of alpha6beta2* nAChRs in the NAs promotes nicotine reward. Given the selective anatomical profile of alpha6beta2* nAChRs, these studies suggest that inhibition of alpha6beta2* nAChRs could support tobacco cessation with minimal off-target effects.

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PA19-3

TRANSCRANIAL DIRECT CURRENT BRAIN STIMULATION INCREASES ABILITY TO RESIST SMOKING

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BACKGROUND: The ability to exert self-control over temptation is a fundamental component of tobacco smoking behavior. Transcranial direct current stimulation (tDCS) of the dorsolateral prefrontal cortex (DLPFC) has been shown to modu-
late cognitive control circuits. Although prior studies have demonstrated that acute stimulation reduces cigarette craving and self-reported cigarette intake, effects on the ability to resist smoking have not been investigated directly. OBJECTIVES: This study assessed effects of a single session of 1.0 mA anodal stimulation over the left DLPFC with cathodal stimulation over the right supra-orbital area (vs. sham stimulation) on ability to resist smoking in a validated smoking lapse paradigm. METHODS: Twenty-five participants completed two tDCS sessions (active and sham stimulation) in a within-subject, double-blind, randomized and counterba-
anced order with a two week washout period between sessions. Following over-
night abstinence, participants received tDCS in the presence of smoking related cues; they had the option to smoke at any time or receive $1 for every 5 minutes they abstained. After 50 minutes, the tDCS equipment was removed and a 60 minute ad libitum smoking session followed. The primary and secondary outcomes were time to first cigarette and the total number of cigarettes smoked, respective-
ly. RESULTS: In multiple regression models, active tDCS (compared to sham) significantly increased latency to smoke (p = 0.02) and decreased the total num-
ber of cigarettes smoked (p = 0.014) during the session. CONCLUSION: These findings suggest that acute anodal stimulation over the left DLPFC (with cathodal stimulation over the right supra-orbital area) can improve ability to resist smoking, supporting the therapeutic potential of tDCS for smoking cessation treatment.

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PA19-4

HIGHER STIMULUS CONTROL IS ASSOCIATED WITH LESS CIGARETTE INTAKE IN DAILY SMOKERS

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It is well established that environmental stimuli influence smoking in light, and to a lesser degree, heavy smokers. A two-factor model of dependence suggests that the influence of stimulus control is masked among heavier smokers who primarily smoke for nicotine maintenance. The current study aimed to assess the influence of stimulus control across a range of moderate to heavy daily smokers. Further-
more, as local tobacco control policies may change the role of stimulus control, the study aimed to replicate previous US findings on stimulus control in an Australian setting marked by strong tobacco control policies. In two Ecological Momentary Assessment studies, 420 participants monitored antecedents of smoking and non-smoking situations. In a set of idiographic logistic regression analyses, situa-
tional antecedents were used to predict smoking occasions within each individu-
al’s data. Linear regression analysis was used to test for the association between stimulus control and smoking rate, and to test for differences between the two samples. Daily smokers’ smoking was under considerable stimulus control, which was weaker at higher smoking rates. Overall, there was greater stimulus control in the Australian sample. Daily smokers also experience a degree of stimulus control,
which is less influential in heavier smokers. Smoking events are more predictable in the more restrictive Australian tobacco control context.

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PA19-5 REDUCING SMOKING-RELATED CRAVING VIA A RETRIEVAL-EXTINCTION MECHANISM

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OBJECTIVE: Recent neuroscience research suggests the possibility that foundational memory processes associated with addiction-related learning may be vulnerable to modification. Specifically, this research has shown that when extensive extinction training closely follows the cue-elicited retrieval of memories for prior learning, the ability of the cues to elicit the learned behaviors during a subsequent test is either attenuated or completely eradicated. A recent Science publication showed, in heroin addicts, that craving to heroin cues could be substantially attenuated following 2 sessions of retrieval-extinction (R-E) training and, more significantly, this effect was still evident 6 months later. The goal of the present study was to build on these impressive initial findings by examining whether R-E training could attenuate craving in smokers. METHODS: Overnight abstinent smokers were randomly assigned to one of two groups. Group R-E completed, on each of two consecutive days, a lab session in which smoking-related memories were retrieved via brief presentation of smoking cues and followed 10-min later by 1-hr of massed smoking cue exposure (i.e., extinction training). The control group, Group NR-E, received the same treatment except that the retrieval cues had no smoking-related content. Twenty-four hours later, participants returned for a brief “test” session that involved assessment of craving to smoking cues. The durability and generalizability of R-E effects were assessed in identical test sessions performed 2- and 4-weeks post-treatment. RESULTS: The craving responses elicited in the 24-hr and 2-week post-treatment test sessions did not differ between groups. However, the mean craving response of Group R-E (m = 2.2, se = .17) was significantly lower than that of Group NR-E (m = 2.7, se = .16) during the 4-week post-treatment test session (p < .05). CONCLUSIONS: This is the first study showing that post-retrieval extinction training can attenuate smoking-related craving more than massed cue exposure training (i.e., extinction training). Implications of the findings for the reconsolidation research literature and clinical practice will be discussed.

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PA19-6 DEPENDENCE AMONG CIGARETTE SMOKERS USING OTHER TOBACCO PRODUCTS

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Despite a decrease in cigarette smoking prevalence, concurrent use of more than one tobacco product, polytobacco (PT) use, is on the rise. Initial intent of using other tobacco products (OTP) among cigarette smokers is not known. It is unclear whether PT use alters tobacco dependence and effects tobacco cessation. The aim of this study was to evaluate the association between tobacco dependence and PT use. Exclusive cigarette smokers were compared to cigarette smokers using OTPs. Data from 8,276 adult cigarette smokers who participated in the 2012-13 National Adult Tobacco Survey were used. Cigarettes smokers were categorized into eight mutually exclusive categories based on current use of cigarettes, e-cigarettes, other combustible tobacco (OCT) including, cigar, pipe, and hookah, and smokeless tobacco (ST) products. Dependence was assessed using survey items evaluating tolerance, craving and withdrawal symptoms. Past quit attempts and intentions to quit smoking were also evaluated. Weighted analysis was performed and associations between dependence factors and types of PT use were examined with odds ratios (OR) and 95% confidence intervals (CI). 40% of current cigarette smokers were PT users. Among PT users, 39% used OCT, one quarter were e-cigarette users, 13% used e-cigarettes and OCT, and 9% were ST users. Cigarettes smokers using OCT, ST, or both OCT and ST had higher tolerance as compared to exclusive cigarette smokers. Similarly withdrawal symptoms and cravings were associated with PT use. Cigarette smokers using e-cigarettes (OR: 2.26, 95%CI: 1.83, 2.78), OCT and ST (OR: 1.95, 95%CI: 1.30, 2.92), or all three OTPs (2.18, 95%CI 1.30, 3.67) were twice more likely to have symptoms of withdrawal and cravings. OCT users (OR: 0.62, 95%CI: 0.51, 0.76) and those using OCT and ST (OR: 0.66, 95%CI: 0.45, 0.98) were less likely to have the intention to quit smoking compared to exclusive cigarette smokers. Study findings indicate substantial association between PT use and tobacco dependence. Due to differences in dependence between PT users and exclusive cigarette smokers, these findings are likely important for guiding tobacco cessation interventions.

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PODIUM PRESENTATION 5: BIOMARKERS OF TOBACCO USE

PA20-1
ASSESSING U.S. POPULATION EXPOSURE TO CYANIDE AND SELECTED OTHER SMOKE CHEMICALS: NHANES 2001-2014

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Cigarette smoke contains significant levels (hundreds of microgram/cigarette) of cyanide, potentially resulting in adverse neurological, respiratory, cardiovascular, and thyroidal effects. The primary metabolite of cyanide is thiocyanate. Because of the potential for widespread human exposure to cyanide from tobacco smoke and other sources, we assessed urinary thiocyanate levels in a nationally representative sampling of U.S. residents, ages 6 years and older, during 2013 – 2014 as part of the National Health and Nutrition Examination Survey (NHANES). These results will be presented along with trends in cyanide exposure based on comparison of thiocyanate levels in NHANES 2001 – 2014. The presentation will also discuss the importance of biomarkers of smoke exposures (such as cyanide).

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PA20-2
ASSESSMENT OF VOLATILE NITROSAMINE EXPOSURE IN THE U.S. POPULATION–NHANES 2013-14

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Volatile nitrosamines (VNAs) are established teratogens and carcinogens in animals and classified as probable (group 2A) and possible (group 2B) carcinogens in humans. In animal studies of nitrosamine exposure, VNAs have been shown to induce tumors in the liver, lung, kidney, bladder, pancreas, and esophagus. Several large epidemiology studies associate VNA exposure with increased risk of insulin-resistance, diabetes, non-alcoholic steatohepatitis, and neurodegenerative disease such as Alzheimer’s disease. VNAs are on the FDA’s list of harmful or potential harmful constituents in tobacco smoke. Exposure of volatile nitrosamines can come from tobacco use, environmental water contamination, as well as consumption of processed food. Therefore, VNA exposure assessment among the US population would be useful given the toxicity and high values of cancer indexes of VNAs. Our laboratory measured, for the first time, the levels of six VNAs in a representative sampling of the US population, using the National Health and Nutrition Examination Survey NHANES 2013-14 (1/3 subset plus all adult smokers). The six measured VNAs were: N-nitrosodimethylamine (NDMA), N-nitrosomethyl-N-ethylamine (NMEA), N-nitrosodimethyl-N-ethylamine (NDEA), N-nitrosopiperidine (NPIP), N-nitrosopyrrolidine (NPYR), and N-nitrosomorpholine (NORM). Free urinary VNAs were measured by GC/MS/MS, and the data were processed using Agilent MassHunter™ software. Geometric mean and selected percentiles of urinary volatile nitrosamines are calculated in the US non-institutionalized population as a potential established baseline. The VNA biomarker data will help public health officials and FDA to monitor population exposure to these chemicals from tobacco use.

Funding: FDA

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PA20-3
EXAMINING COTININE AND HEMOGLOBIN A1C AMONG ADOLESCENTS FROM THE 1999-2012 NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY

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BACKGROUND: Type 2 diabetes and tobacco use are leading causes of morbidity and mortality in the United States. Despite national prevention efforts, active and passive smoking remain prevalent among adolescents. In adults, smoking has been associated with an increased risk of the development of type 2 diabetes. Whether smoking leads to transient or continuous elevations in blood glucose concentration is unclear. Evidence that smoking is a risk factor for type 2 diabetes in adolescents has not been thoroughly assessed. OBJECTIVE: Our study purpose was to examine the relationship between serum cotinine and hemoglobin A1c (HbA1c) in adolescents without diabetes. Methods: Data from 5,544 participants aged 12-19 years who did not have diabetes from the 1999-2012 National Health and Nutrition Examination Survey were examined. We calculated age-adjusted mean HbA1c according to cotinine in a univariate analysis for adolescents without impaired fasting glucose, and replicated this analysis among those with impaired fasting glucose. We then conducted age-adjusted and multivariable-adjusted linear regression models to examine the relationship between cotinine and HbA1c. RESULTS: Our sample included 2,252 participants with cotinine >3 ng/mL (42.8%), 2,359 participants with cotinine 0.05-2.99 ng/mL (38.5%), and 933 participants with cotinine ≥3 ng/mL (18.7%). Cotinine levels significantly differed based on sex, race/ethnicity, education, income level, physical activity, waist circumference, and secondhand smoke exposure. Among adolescents with and without impaired fasting glucose, there was a trend in mean-adjusted HbA1c by cotinine level, but it was not significant. In age-adjusted and multi-variable adjusted analyses, no differences were found between cotinine and HbA1c. CONCLUSIONS: Our study suggests that cotinine remains high in a representative sample of US adolescents without diabetes. Prior research on cotinine and HbA1c for adolescents has been limited, and this study provides national, cross-sectional data to show that cotinine in adolescence may not be associated with high HbA1c. Tobacco exposure may require longer duration before abnormalities are detected.

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PA20-4
TRANS-3’-HYDROXYCOTININE (3HC) TO COTININE (COT) RATIO AND TIME TO FIRST CIGARETTE AMONG YOUNG ADULT SMOKERS

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Whereas there is evidence that cigarette smokers metabolize nicotine at different rates, and that the rate of metabolism is largely governed by specific genes, including CYP2A6, it is still not clear how the expression of these genes translates into smoking behavior and addiction. It is thought that those who eliminate nicotine quickly enter the early stages of nicotine withdrawal and as a result smoke more. Evidence has shown that slower metabolism of nicotine is associated with better smoking cessation rates in both adults and adolescents. The time to the first cigarette of the day (TTFC) is related to a range of negative smoking-outcomes, including cancer risk and cessation failure. It has been noted that the time to the first cigarette of the day reflects a sustained, heavy pattern of smoking – independent of the cigarette of the day (CPD) – and that TTFC may be among the strongest indicators of nicotine dependence. The current study sought to examine the relation between nicotine metabolism and TTFC in an adolescent and young adult population. It was hypothesized that a faster rate of nicotine metabolism would predict overall higher level of nicotine addiction, as indicated by an earlier TTFC. Participants were 2,882 participants from the third wave of the ADD Health survey who reported regular smoking. A sub-sample of 1,016 of these daily smokers were selected to have their urine samples further tested for cotinine (COT) and trans-3’-hydroxycotinine (3HC). A total of 967 participants had usable urine samples for analyses. The resulting 3HC/COT ratio, which is correlated with the hepatic clearance of nicotine and has been used as a reliable marker of CYP2A6 activity, was utilized in all analyses. Hierarchical regression models included control variables in the first block: age, years as regular smoker, and CPD. The second block contained the 3HC/COT ratio as the primary predictor of TTFC. Given evidence of different
levels of nicotine metabolites by gender in this sample, separate models were conducted for males and females. Results demonstrate that slower metabolism as indicated by 3HC/COT was a significant predictor of an earlier TTFC for females, but not males. Results suggest that whereas nicotine metabolism may result in differences in cigarettes smoked per day, it is only predictive of nicotine addiction among females. Further results and implications for future research, risk screening and interventions will be presented.

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PA20-5
PERFORMANCE CHARACTERIZATION OF PTS DETECT COTININE SYSTEM, A POINT-OF-CARE-ANALYZER FOR THE RAPID QUANTIFICATION OF COTININE IN WHOLE BLOOD

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Smoking causes illnesses such as cancer, heart disease, stroke, problems with pregnancy, and lung disease, and more than 435,000 Americans die each year from smoking. Smoking cessation efforts related to personal and corporate health and wellness programs have been limited due to the lack of a real-time quantitative monitoring system. Previously, point-of-care cotinine detection solutions available were limited to measurement in urine or saliva and were primarily qualitative in nature. Quantitative results have only been available from samples analyzed at a central laboratory with up to a two-week turnaround time. To address this need, PTS Diagnostics has developed the PTS Detect cotinine system, a semi-disposable, hand-held, lateral-flow, competitive immunoassay for the quantification of cotinine, the primary metabolite of nicotine in blood. The analyzer utilizes 40 µl of fingerstick (capillary) or venous whole blood covering a dynamic range of 25-200 ng/mL. Quantitative results are available in 5 minutes. Evaluation of the quantitative performance consisted of precision, linearity, and method correlation according to established CLSI standards. Precision, evaluated over 5 days at 3 sites and 2 concentrations (n=75 total per level), demonstrated a 3.47% and 2.53% CV at 59 and 129 ng/mL, respectively. Accuracy was assessed through a method comparison using a validated reference method of competitive ELISA. When comparing 98 unique samples to the reference, a weighted linear regression model yielded a slope of 1.04 and correlation coefficient, r, of 0.90. Agreement between venous and fingerstick whole blood from matched donors (n=32) yielded a slope of 1.00 and an r of 0.98. Thus, the analyzer demonstrated accurate, precise and linear quantitative results for cotinine from both venous and fingerstick whole blood. Availability of this rapid quantitative POC cotinine system should greatly enable the screening of general population in health and wellness programs as well as smoking cessation programs.

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PA20-6
AN IMPROVED METHOD FOR THE MEASUREMENT OF TOBACCO-SPECIFIC CARCINOGEN BIOMARKER URINARY 4-(METHYLNITROSAMINO)-1-(3-PYRIDYL)-1-BUTANOL (NNAL) IN TOBACCO USERS

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Tobacco-specific nitrosamines (TSNAs) are a group of carcinogens inherent to tobacco and tobacco products. There is strong evidence for TSNAs’ important role in inducing tobacco-related diseases. Of all TSNAs, 4-(methyl nitrosamino)-1-(3-pyridyl)-1-butanol (NNK) is the most carcinogenic. 4-(Methylnitrosamino)-1-(3-pyridyl)-1-butanol (NNAL), the primary metabolite of NNK, is a cancer risk biomarker in addition to its well-established role as an exposure biomarker in epidemiologic studies. In our laboratory, we improved the existing method on the measurement of NNAL in tobacco users by shortening the analysis time, and therefore, increasing the throughput by at least 5 times. At the meantime, by using the robotic sample preparation and automatic data processing, the improved method provides more precise and accurate measurement of NNAL for studies that focus on tobacco users. The high throughput liquid chromatography tandem mass spectrometry (LC/MS/MS) method with robotic sample preparation and automatic data processing was improved and validated for the determination of both free and total NNAL (including both free and conjugated forms) in urine. The sample size was decreased from previously reported 1.7 mL to 0.25 mL. The sample preparation time was shortened from previous reported 10 hours to 2 hours. The limit of detection was 1 and 2 pg/mL for free and total NNAL respectively, with a linear calibration range of up to 20,000 pg/mL. The improved robotic sample preparation method decreased sample volume, decreased the matrix effects and increased the throughput. The automatic data process by using Indigo Ascent™ combined peak integration and quality assurance, resulting in improved precision and reproducibility. Intra-day and inter-day precision for NNAL measurements are less than 13% respectively. Total urinary NNAL is not only a sensitive and specific biomarker for tobacco use, but also a biomarker of cancer risk. Our results suggest that this improved sensitive and automatic method with high throughput is suitable for application to large epidemiologic investigations of health risks associated with the use of tobacco products.

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PODIUM PRESENTATION 5: SMOKING AND SOCIAL MEDIA

PA21-1
EXPLORING THE UTILITY OF ONLINE SOCIAL MEDIA ADVERTISING TO RECRUIT ADULT HEAVY DRINKING SMOKERS FOR TREATMENT
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Identifying novel ways to recruit subgroups of adult smokers, such as heavy drinking smokers, for treatment studies is important. Heavy drinking smokers are less likely to try quitting smoking, yet they have increased risk for serious medical problems, so drawing this hard-to-reach population into treatment is important for improving health outcomes. In the current study, we examine the effectiveness of 3 Facebook ads depicting images of cigarettes and offering help for quitting smoking to users in the greater New Haven, CT area. Identifyning who responds to smoking ads on social media may suggest new ideas for recruitment or innovative web-based intervention strategies. In total, 3 ads generated 1781 clicks and 516 surveys in 2 months, with one ad generating the most interest. N=319 valid web surveys were analyzed after removing incomplete (n=157) and duplicate (n=41) entries. Facebook advertising was highly cost effective, totaling $480.89, and averaging $2.27 per click and $50 per valid survey completed, and $44.49 per eligible participant. On average, survey respondents were 37.2 (SD=10.7) years old, and 63.9% were female. The ad was successful in reaching smokers, 82.8% reported daily smoking (range 2-40 cigarettes per day). Additionally, many smokers regularly used alcohol, 56.7% reported heavy alcohol consumption at least once a month (≥ 5 standard drinks/men, ≥ 4 standard drinks/women) and 16.3% reported experiencing at least one alcohol withdrawal symptom in the past. The majority of respondents (93.4%) were interested in reducing cigarette use immediately, while 20.7% were interested in reducing their alcohol use now and 12.9% were possibly interested in making changes at a later date. Several respondents endorsed current medical problems (17.2%), taking prescription medication (26.9%), and a history of psychiatric problems (14.1%). Social media ads designed to target smokers were cost-effective and successful for reaching adult smokers interested in treatment. Additionally, recruiting for smokers reached those who also drink heavily, many of whom were interested in changing this behavior as well. Treatment and research implications will be discussed.

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PA21-2
USING WHATSAPP AND FACEBOOK SOCIAL GROUPS FOR SMOKING RELAPSE PREVENTION: A PILOT PRAGMATIC RANDOMIZED CONTROLLED TRIAL
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BACKGROUND AND OBJECTIVES: Quit attempters often have episodes of smoking relapse before they can eventually quit. Social media is becoming popular for smoking cessation and relapse prevention, but its effectiveness has not been fully explored. Our randomized controlled trial (RCT) tested the effect of group discussion and reminders via the WhatsApp or Facebook social group to prevent smoking relapse in quitters who had stopped smoking recently. METH-ODS: A single-blinded, pragmatic parallel three-arm pilot cluster RCT. Recent quitters, who had completed an 8-week treatment and reported abstinence for at least 7 days, were randomly allocated to WhatsApp (n = 42), Facebook (n = 40), and Control group (n = 42). The 2 intervention groups participated in a 2-month group discussion moderated by a trained smoking cessation counselor and received a self-help booklet on smoking cessation. The Control group only received the booklet. FINDINGS: Fewer subjects in the WhatsApp group (14.3%) reported smoking in the past 7 days than the Control group (44.4%) at 2- (odds ratio (OR) = 0.21, 95%CI 0.08-0.58) and 6-month follow-up (35.7% versus 61.1%, OR = 0.35, 95%CI 0.15-0.82). Facebook group showed a lower smoking rate at 2- (30.0 % versus 44.4%, OR = 0.54, 95%CI 0.23-1.27) and 6-month follow-up (52.5 % versus 61.1%, OR = 0.70, 95%CI 0.31-1.61), but the difference was not significant. WhatsApp social groups had more moderators’ posts (Median: 60 versus 31.5, Mann-Whitney U test: p=0.05) and subjects’ posts (Median: 35 versus 6, Mann-Whitney U test: p=0.07) than Facebook counterparts. CONCLUSIONS: The intervention via WhatsApp social group was effective in reducing relapse, probably because of enhanced discussion and social support. Inactive discussion in the Facebook social group might have attributed to the lower effectiveness.

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PA21-3
GENDER DIFFERENCES IN LANGUAGE DISCLOSED IN TWITTER-BASED QUIT SMOKING INTERVENTION
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In treatment studies, men are more likely to quit smoking than women, especially with pharmacotherapy. In our recent randomized trial of a Twitter-based peer-to-peer quit smoking intervention, added to nicotine patch and website referral, the treatment effect was significant for men and women; however, men were more successful overall, with 56% quit vs. 33% of women in the Twitter intervention. Analysis of language disclosed in online quit smoking groups may inform understanding of gender differences in cessation rates. We ran 8 private, 100-day long, 20-person, Twitter quit smoking groups. Of 160 intervention participants, 117 (73%) tweeted at least once. We analyzed group dialogue (i.e., tweets) by gender, based on theory driven a priori hypotheses. The Linguistic Inquiry Word Count (LIWC) categories chosen as the dependent variables were tested in a MANOVA, controlling for total number of tweets. We completed semantic network analyses to understand language most central to each gender after removing stop words, creating a synonym set (e.g., coding all reference to group member names as group member) and identifying most frequent terms. The 117 participants were 91% White, 64% female, 56% married, 38% college-degreed, and 73% employed. At baseline, the sample averaged 19.2 (SD=9.4) cigarettes/day and 16.6 (SD=9.5) years of smoking. Though overall tweet volume did not differ by gender, LIWC categories did (p=0.027). Women were more likely to express positive emotion (p=0.004), use “I” pronouns (p=0.044), “we” pronouns (p=0.038), present tense (p<0.001) and future tense (p=0.005). While the most central terms were “great,” “smoke,” and a group member’s name, the “patch” was far more central for men than women. Further, men tended to be more quit focused (e.g. crave, days free), while women were more social and emotion focused (e.g. lol, feeling, birthday). Men and women in cessation treatment used different language, with different degrees of present and future orientation and different areas of focus. Given the observed differences in quit success and support topics, worth testing is the potential benefit of gender-specific support groups relative to co-ed.

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PA21-4
EXPOSURE AND ENGAGEMENT WITH TOBACCO AND E-CIGARETTE-RELATED SOCIAL MEDIA AMONG TEXAS ADOLESCENTS
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BACKGROUND: A majority of adolescents use social networking websites such as Facebook, Instagram, and Twitter, yet little is known about the nature and extent of their exposure to tobacco and e-cigarette related communications on these media. In this study, we describe the prevalence of youth exposure and engagement with tobacco and e-cigarette (“e-cig”)-related social media and its association with tobacco use behaviors. Methods: Data for this study were from wave 1 of the Texas Adolescent Tobacco and Marketing Surveillance system (TATAMS), a cross-sectional sample of students in the 6th, and 8th-10th grades (n=3924). Logistic re-
OBJECTIVE: As the use of e-cigarettes continues to rise, public awareness of these products is likely shaped by the proliferation of messages shared and re-shared on social media. This study examined the public conversation on Twitter to determine overarching themes and trending topics. METHODS: This study used a text mining approach to uncover key patterns and relationships within unstructured data to understand and evaluate information important to the audience. Twitter was selected for data collection due to its popularity as a microblog as well as the active nature of its users in sending messages regarding the use of new products and related social issues. SAS Text Miner 12.1 software was utilized for descriptive text mining to uncover the primary topics from tweets collected from March 24, 2015 to July 3, 2105 using a Python script in conjunction with Twitter’s Search API. Eighteen keywords related to electronic cigarettes were used and resulted in a total of 546,651 tweets that were sorted into ten overarching themes through a text topic node. RESULTS: Seven of the ten final themes were marketing-focused, including brand and vendor promotions, discounts, and general product use and information. The remaining topics included three unique conversations: 1) a discussion about e-cigarette use bans, 2) encouragement to share and sharing of “vaping” stories with other users, and 3) efforts to differentiate e-cigarettes from traditional tobacco products by pointing to the lack of evidence for the harm or risks of e-cigarettes, along with the position that e-cigarettes should be promoted as smoking cessation devices. CONCLUSION: E-cigarette brands and distributors continue to heavily use social media for e-cigarette marketing and promotion; additionally, the findings also reveal unique, large-scale consumer conversations. Consumers are turning to social media to participate in discussions about policies, personal experiences, and the differentiation of e-cigarettes from traditional tobacco. Future research should focus on these unique conversations to understand how they influence attitudes towards and use of e-cigarettes.

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PA21-6 FROM ‘VAPE’ TRICKS TO BRAND PROMOTION: ASSESSING YOUTUBE VIDEO CONTENT RELATED TO ELECTRONIC CIGARETTES

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INTRODUCTION: The number of videos related to electronic cigarettes (ecigs) is rapidly growing on YouTube garnering millions of views. Restriction for minors to videos is limited, if not easily circumvented. Content in videos about electronic cigarettes vary from professional advertisements to product reviews by individual users. METHODS: This study presents a preliminary assessment on content of YouTube videos related to electronic cigarettes. A database of 100 randomized videos was used to create a codebook assessing the presences of content such as promotional activities, cessation claims, mentions of e-juice, product safety, products reviews, and more. RESULTS: Of the 100 videos reviewed, 43 were excluded as non-relevant or non-English speaking leaving 57 videos. Fifty six (98%) were pro-ecig use with zero against and 1 neutral in sentiment. The source of the videos ranged from individual users (49%), commercial individuals or bloggers (29%) and commercial companies (21%). Majority displayed ecig use or ‘vaping’ in the video (84%) with 73% being product reviews. Specific brands were mentioned in 87% and 63% of videos contained links to vendors. Statements about e-juices and flavors were present in 56% and 54% of videos respectively. Dual use of ecigs with marijuana or hookah was present in 14% of videos. DISCUSSION: Initial findings show highly favorable sentiment toward ecigs and their use in YouTube videos. Active use is present in majority of videos, as well as descriptions of products, flavors and various-juices. Individual users who review products and provide instructions on their use create most videos and acquire millions of followers. Little to no content includes educational or health advisory information for viewers. Access to videos is extremely easy with no age restriction or viewer advisory warnings. CONCLUSION: Content of YouTube videos relating to electronic cigarettes is imbalanced with high amounts of positive imaging and promotion.

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PODIUM PRESENTATION 6: DISPARITIES IN POPULATIONS

PA22-1
GENDER DIFFERENCES IN THE ASSOCIATION OF SEXUAL ORIENTATION WITH SMOKING STATUS AND SMOKING CHARACTERISTICS: FINDINGS FROM A REPRESENTATIVE POPULATION SURVEY

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BACKGROUND: There is growing evidence that sexual minorities are more likely to smoke but representative data are lacking and little is known about the pattern of association with gender, whether smoking characteristics vary by sexual orientation and if differences can be explained by other socio-demographic characteristics. METHODS: Data come from a cross-sectional survey (Smoking Toolkit Study) of a representative English population sample (N=27,449) conducted in 2014/15 which assessed sexual orientation, socio-demographic and substance use characteristics. RESULTS: In this sample, 92.8% (N=25,470) self-identified as heterosexual, 0.6% (N=176) as bisexual, 1.1% (N=292) as gay, and 5.5% (N=1,512) did not disclose their sexual orientation. Gender interacted with sexual orientation on smoking status: among men a significantly higher proportion (30.4%) of those who identified as gay were smokers compared with those who identified as heterosexual (20.1%), with bisexual men and those not disclosing their sexual orientation having intermediate smoking rates (both 23%). Among women a significantly higher proportion (30.9%) of those who identified as bisexual and a lower proportion (15.0%) of those who did not disclose their sexual orientation were smokers compared with those who identified as heterosexual (17.8%), with lesbians displaying intermediate smoking rates (24.3%). However, after controlling for putative confounders, differences were attenuated and persisted only in gay as compared with heterosexual men (OR 1.56, 95%CI 1.12-2.18, p<0.011). Gender and sexual orientation also interacted on various smoking characteristics: bisexual men were more dependent than other men (p<0.011), and lesbians were more likely than heterosexual women to smoke roll-your-own tobacco (p<0.005). CONCLUSIONS: Both smoking characteristics and prevalence differ by sexual orientation. However, these differences are not uniform across gender and are in part explained by socio-demographic characteristics. Even after taking into account putative confounders, gay men appear particularly vulnerable to smoking. Further research is required to identify the underlying causes for this disparity.

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PA22-2
PERCEPTIONS OF E-CIGARETTES AMONG LGBTQ YOUTH AND YOUNG ADULTS IN ONTARIO CANADA

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BACKGROUND: Lesbian, Gay, Bisexual, Trans and Queer (LGBTQ) communities have historically been targeted by the tobacco industry. Smoking rates among LGBTQ communities are high – estimated to be more than double the provincial rate in Ontario. Little is known about how e-cigarettes are viewed in these communities. METHODS: This study conducted 24 focus groups with 204 participants between March and May 2015 with youth (aged 16 and 17) and young adults (aged 18-29). Participants were current cigarette smokers or recent quitters (within the last 6 months), and identified as LGBTQ. Focus group discussions were transcribed word-for-word and content was coded based on a priori categories. This study reviews findings related to e-cigarettes including: (1) perceptions of product safety, (2) product acceptability, and (3) effectiveness of e-cigarettes as a cessation tool. RESULTS: Some participants in the focus groups reported concern about the safety of e-cigarettes since the composition of the e-liquid was unknown. Other participants discussed studies describing e-cigarette’s relative safety compared to cigarettes. Participants described their mistrust of both the pharma and tobacco industry and felt e-cigarettes were being unfairly suppressed in the Canadian marketplace. Participants shared preferences for flavored products suggesting that tobacco flavored e-liquids were helpful if cessation was the objective. Second and third generation products were preferred over cig-a-like products; however, partici- pants complained that expensive devices regularly broke, and they returned to cigarettes. Many participants discussed how they had used e-cigarettes to quit successfully or temporarily. One participant reported that e-cigarettes helped them quit using cigarettes because it was a suitable replacement product that still per-mitted them to participate in social smoking. “… it enabled me to still have that social aspect of smoking… with friends”. CONCLUSIONS: Being able to use an e-cigarette while friends smoke cigarettes supports the social dimension of using cigarettes. No discussant remarked that the e-cigarette industry had directly market-ed their community.

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PA22-3
UNCOVERING HETEROGENEITY IN AFRICAN AMERICAN TOBACCO USE: THE ROLE OF EDUCATION

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BACKGROUND: African Americans suffer a disproportionate share of tobacco-related death and disability. While studies have shown different patterns of tobacco use across racial subgroups, few nationally representative studies have focused on factors, such as education, that may differentiate tobacco use within African Americans. Such data is critical for the design of interventions that target the highest risk groups. METHODS: We examined tobacco product use among a sample of African Americans (n=1,317) obtained from a larger nationally representative online study (n=17,522). Frequency analysis was conducted among the whole sample and across educational strata (less than high school, high school diploma/GED, some college, at least a college degree). We used adjusted logistic regression to examine the relationship between education and both current smoking and menthol smoking among smokers. RESULTS: There were significant decreases in current smoking rates with increasing education levels, with rates ranging from 23.1% among those with less than a high school degree to only 8.8% of those college degree or higher. Use of menthol cigarettes was also less common in African Americans smokers of higher educational strata. A strong relationship between education and both current smoking and menthol smoking persisted in adjusted regression analysis. There were also differential patterns of e-cigarette use, hookah use and cigar use across strata. DISCUSSION: Tobacco use patterns of African Americans differ across educational strata. Further research is needed to disentangle the factors that put some African Americans at such high risk; information will inform educational and intervention efforts.

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PA22-4
SMOKEFREE VET QUIT PLAN: HELPING VETERANS PREPARE FOR SMOKING CESSION THROUGH PERSONALIZATION

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Nearly nine million Veterans receive healthcare from Veterans Affairs (VA) each year, and just under one in five VA enrollees report that they currently smoke. VA
works to reduce tobacco use among Veterans through evidence-based resources, such as those on the SmokefreeVET website. In an effort to provide a more engaging user experience that offers guidance for cessation preparation, SmokefreeVET developed Quit Plan—an interactive web-based tool for Veterans preparing to quit smoking. Quit Plan takes users through a series of brief activities to help Veterans understand their own smoking behavior, plan for cessation, and set expectations for the first month of cessation. These activities include setting a quit date and selecting cessation milestone rewards; identifying reasons for quitting, smoking triggers, and tips and tricks for overcoming different types of cravings; learning about cessation resources, such as medications, nicotine replacement therapy, quitlines, and mobile apps; and reaching out to loved ones to let them know the user is quitting. Quit Plan has integrations with online calendars, (e.g., Google and Outlook) and social media, and connects users directly with resources, such as enrollment in SmokefreeVET’s text message program and information on accessing VA’s telephone quitline. In addition to these integrations, the user receives their personalized Quit Plan—a compilation of all activity selections—in HTML or PDF format, which allows the user to refer back to their plan as they prepare for and engage in smoking cessation. Google Analytics collects data on users’ selections throughout the Quit Plan activity. We report findings captured by Google Analytics that allow us to gather insights on common triggers, cravings, and smoking preparation behaviors among Veteran smokers. These insights allow VA and SmokefreeVET to understand the needs of Veterans who are trying to quit smoking, and to further develop content and resources that address their needs. This presentation will include an overview of Quit Plan personalization features, including the formative research, information architecture best practices, and plain language considerations that influenced the final design. Metrics used to evaluate the performance of the tool and guide future enhancements will be showcased. The presentation will conclude with a discussion of how this tool may be adapted for other mobile platforms including text messaging and mobile applications.

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PA22-6

BARRIERS TO CESSATION AS A MEDIATOR BETWEEN NICOTINE DEPENDENCE AND WITHDRAWAL IN PREDOMINANTLY AFRICAN AMERICAN SMOKERS

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BACKGROUND: Abstinence-induced nicotine withdrawal symptoms appear to be a powerful deterrent against a successful smoking cessation attempt, particularly for smokers with greater nicotine dependence. Investigating potential mediators of the relation between dependence and withdrawal may lead to enhanced treatment strategies, by identifying targets that could disrupt withdrawal. We hypothesized that perceived barriers to cessation act as a mediating factor between nicotine dependence and abstinence-induced withdrawal symptoms based on the notion that the mere perception of barriers during a cessation attempt acts as a powerful cognitive mechanism, which could alter the physical symptoms experienced during the actual attempt. METHODS: Adult non-treatment seeking daily smokers (n = 282, 47±12 years old, 90% African American, 45% female) attended a baseline session during which they completed self-report measures of nicotine dependence and barriers to smoking cessation. Subsequently, during two counterbalanced experimental sessions (16 hours smoking abstinence and ad libitum smoking), participants completed the Minnesota Nicotine Withdrawal Scale (MNWS), a self-report questionnaire assessing withdrawal symptoms. RESULTS: Nicotine dependence significantly predicted both greater abstinence-induced withdrawal symptoms and greater barriers to smoking cessation, with and without controlling for cofactors like gender, anxiety and depression (beta = 0.16-0.18, ps < 0.01). The predictive influence of higher nicotine dependence levels on abstinence-induced withdrawal symptoms was significantly mediated by increased barriers to cessation (beta[95%CI] = 0.05 [0.03-10]), even after controlling for gender, anxiety and depression [AL1] (beta[95%CI] = 0.06 [0.03-11]). CONCLUSIONS: These results are consistent with the possibility that perceived barriers to smoking cessation act as a cognitive pathway leading to more severe abstinence-induced withdrawal symptoms in severely nicotine-dependent smokers. Targeting perceived barriers to smoking cessation could lessen the withdrawal symptoms that high-dependence smokers experience, which in turn could ultimately increase odds of a successful quit attempt.

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PA22-5

DEMAND FOR CIGARETTES VARYING IN NICOTINE CONTENT IN SMOKERS FROM VULNERABLE POPULATIONS: A PILOT STUDY

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INTRODUCTION: The cigarette purchase task (CPT) is a behavioral economic measure that allows for the quantification of the reinforcing effects of cigarette smoking. The purpose of the present study was to use the CPT to quantify the reinforcing effects of cigarettes with different levels of nicotine in a pilot study conducted with smokers (N = 24) from three vulnerable populations (i.e., economically disadvantaged women, opioid abusers, those with affective disorders). METHOD: Following acute abstinence, participants smoked four research cigarettes with different doses of nicotine (0.03, 0.12, 0.26, and 0.80 mg) under double-blind conditions, as well as their usual brand. Cigarettes were smoked ad-lib using a CreSS device after which participants completed a battery of questionnaires including the CPT. Five CPT demand indices were calculated: (a) Intensity of demand (i.e., consumption if cigarettes were free), (b) O_pl (i.e., maximum expenditure at each of 19 prices), (c) P_max (i.e., price at which maximum expenditure occurred), (d) breakpoint (i.e., price at which consumption reached zero), and (e) elasticity (i.e., derived from an exponential demand equation). Data were analyzed collapsing across vulnerable populations using mixed model repeated measures analysis of variance. RESULTS: No differences were noted with intensity. OD_pl differed between doses, with higher spending for usual brand compared to the research cigarettes (p = .03). PM_max differed between doses, with maximum expenditure occurring at lower prices at .03 mg compared to usual brand (p = .04). Breakpoint also differed between doses, with consumption of the 0.03 mg cigarette reaching zero at lower prices compared to other doses (p = .01). Finally, elasticity differed as a graded function of dose with consumption decreasing more rapidly at lower doses (p < .01). CONCLUSIONS: The CPT is sensitive to differences in demand following a single exposure to cigarettes differing in nicotine content. Importantly, participants were least willing to defend consumption of the 0.03 mg dose cigarette suggesting that lowering nicotine content to very low levels may increase sensitivity to price.
PODIUM PRESENTATION 6: TOBACCO HEALTH WARNING

PA23-1
DOES ANYONE HEED THE WARNINGS? SYSTEMATIC REVIEW OF THE LONGITUDINAL IMPACT OF CIGARETTE PACK WARNINGS

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BACKGROUND: Cigarette pack warnings are a near-universal global strategy for tobacco control. We sought to better understand the impact of cigarette pack warnings by systematically reviewing longitudinal studies. METHODS: We used comprehensive search procedures to collect a systematic sample of studies. To be included, a study had to: 1) be observational and report pre-post data on a warning policy change; 2) use a longitudinal design, and 3) measure knowledge, attitudes/beliefs, intentions, or behavior. Our searches yielded 6,241 references after removing duplicates. Two independent coders screened all studies, resulting in a final set of 33 studies. Two independent coders coded all study characteristics. RESULTS: The 33 studies evaluated warning policy changes in 21 different countries, most often Australia (26%), Canada (12%), and the UK (11%). Studies were more likely to report an increase in knowledge than an increase in quit attempts, unlike the original side-of-pack warnings. We found consistent prediction of reactions on subsequent quitting in Thailand, but no evidence of wear-out except at the last survey wave. There was no detectable effect of the large increase in warning size in Thailand.

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PA23-2
IMPACT OF GRAPHIC PACK WARNINGS ON ADULT SMOKERS’ QUITTING ACTIVITIES: FINDINGS FROM THE ITC SOUTHEAST ASIA SURVEY (2005-2014)

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BACKGROUND: Health warning labels (HWLs) are important for warning people about the harms of smoking and to encourage smokers to quit. AIM: This study sought to examine the effectiveness of the Chinese HWLs among non-smokers in China. METHOD: Data is from Wave 4 (September 2011-November 2012) of the International Tobacco Control (ITC) China survey, a survey of smokers and non-smokers in 7 Chinese cities. RESULTS: Among 1325 non-smokers, 12.7% reported they noticed the HWLs “often” in the last month and 12.1% reported they noticed the HWLs “once in a while,” with the remaining not reporting noticing the HWLs. The bivariate analysis showed that respondents with a smoking partner (p=0.009, OR=2.16[1.23-3.89]) and 5 vs. 0 smoking friends were more likely to notice HWLs (p=0.004, OR=3.61[1.61-10.37]). The relation between having a smoking partner and noticing the HWLs more often remained significant in the multivariate model. Among the 432 non-smokers who noticed the HWLs “once in a while” or “often” in the last month, 63.4% reported the HWLs made them feel alarmed, 28.1% reported the HWLs made them feel unpleasant, and 65.5% reported the HWLs made them feel worried. Respondents who noticed HWLs “often” in the last month (p=0.008, OR=0.40[0.20-0.78]) were less likely to report that the HWLs made them feel unpleasant. 54.7% reported they thought the HWLs were realistic. Respondents with higher education (p=0.013, OR=2.37[1.20-4.66]) and 5 vs. 0 smoking friends (p=0.0001, OR=6.84[2.45-9.13]) were more likely to report that they think the HWLs were realistic. The majority of respondents supported adding more information (66.0%) and pictures (86.1%) as part of the HWLs to cigarette packs. Respondents who had a smoking partner (p=0.001, OR=2.43[1.42-4.14]) were more likely to support adding pictures to the HWLs. CONCLUSION: The Chinese HWLs are noticed by a minority of non-smokers. Non-smokers with predictive analysis was subsequest quit attempts. Logistic regressions and generalised estimating equation models were used. RESULTS: Following the implementation of GHWs in Malaysia, reactions increased, in some cases to levels similar to the even larger, longer standing Thai warnings but declined over time. In Thailand, reactions increased following implementation of GHWs (introduced in 2005), with no decline for several years, but no clear effects with the small increase in warning size in 2010. Overall, Thai reactions were predictive of subsequent quit attempts in bivariate analysis, and cognitive responses were consistently predictive in multivariate analyses. However, in Malaysia, there was no clear relationship until the waves following the implementation of GHWs: all warning reaction measures at Wave 4 (in late 2009) and Wave 5 (2011) were found to be predictive of quit attempts in bivariate analysis; and in multivariate analyses, avoiding (at Wave 4) and warning salience and cognitive responses (at Wave 5) remained predictive of subsequent quit attempts. CONCLUSIONS: The large change in Malaysia’s warnings was associated with increases in reported reactions with evidence of wear-out, and showed, as in other places, that graphic warnings prospectively predict quit attempts, unlike the original side-of-pack warnings. We found consistent prediction of reactions on subsequent quitting in Thailand, but no evidence of wear-out except at the last survey wave. There was no detectable effect of the small increase in warning size in Thailand.

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smoking friends and partners notice the HWLs more often. Non-smokers strongly support strengthening the Chinese HWLs with more information and pictures.

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PA23-5
A SHORT MEASURE OF REACTANCE TO HEALTH WARNINGS
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BACKGROUND: The motivation to resist a perceived threat to freedom is known as reactance. Reactance undermines receptivity to health warnings, making reliable and valid assessment of this construct critical during the message development process. We developed and validated a short reactance scale in the context of cigarette pack warnings. METHODS: The trial randomized ~1,900 adult smokers in North Carolina and California to receive pictorial or text-only warnings applied to their cigarette packs for four weeks. We previously developed 27-item Reactance to Health Warnings Scale has strong psychometric properties, but may be too lengthy for researchers to routinely use in practice. Thus, we used theoretical and empirical criteria to develop a six-item short version of the reactance scale with two factors, anger and threat to freedom, that we assessed at baseline, week 1 follow-up, and week 4 follow-up. RESULTS: Confirmatory factor analysis revealed that the two-factor conceptualization of reactance, separating anger and threat to freedom, fit the data well (RMSEA=.05, CFI=.99). The anger and threat to freedom subscales demonstrated good internal consistency (α=.85 and .70) and high test-retest reliability at four weeks (r=.55 and .57). As hypothesized, both subscales correlated positively with trait reactance and positive smoker prototypes (p<.05), supporting the measures’ convergent validity. Anger and threat to freedom both predicted avoiding the warning (mean OR=1.77 and 1.28, both p<.001). Most importantly, both subscales predicted being less motivated to quit smoking (mean OR =.89 and .67, both p<.05). CONCLUSION: The short form of the Reactance to Health Warnings Scale exhibited strong psychometric properties. Predictive validity analyses revealed that greater reactance was associated with greater avoidance of the warnings and lower motivation to quit smoking, providing new evidence that reactance could weaken the beneficial effects of health warnings. The scale could serve as an efficient adjunct to message development in tobacco control and other areas of public health.

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PA23-6
CIGARETTE-PACK WARNINGS, AWARENESS OF TOBACCO CONSTITUENTS AND QUIT BEHAVIOR: A POPULATION-BASED LONGITUDINAL STUDY OF SMOKERS IN AUSTRALIA, CANADA, MEXICO, AND THE UNITED STATES
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INTRODUCTION: Health warning labels (HWLs) on cigarette packs often include information about toxic tobacco constituents; however, little is known about smokers’ responses to this information. This study assessed changes in smokers’ awareness of toxic constituents and of smoking-related risks overtime, as well as their associations with HWL responses and subsequent cessation-related perceptions and behavior. METHODS: Online consumer panels of adult smokers in Australia (AU; n=3,163), Canada (CA; n=2,778), Mexico (MX; n=2,488), and the US (n=2,663) provided quarterly survey data from September 2012 - May 2014. Replenishment was used to maintain the sample size of approximately 1,000 smokers in each country. Only participants with follow-up data were included in the analysis. Country-specific indices for awareness of tobacco toxins and of smoking risks were calculated based on the inclusion of such information on existing HWLs in each country. Generalized estimating equation models were estimated for each country, regressing quit intentions, and subsequent wave risk perceptions and quit attempts on both indices and attention to HWLs, while adjusting for sociodemographics, smoking-related variables, survey wave, and time-in-sample. RESULTS: Awareness of toxins increased over time in AU (p<0.001), CA (p<0.001), & MX (p<0.001) while risk perceptions increased only in AU (p<0.001) & CA (p<0.001). Attention to HWLs, awareness of toxins and perceived risk were all independently associated with stronger subsequent risk perceptions, except in the US. Stronger risk perceptions were independently associated with quit intentions in AU, CA & MX. Across all countries, attention to HWLs was associated with greater likelihood of making a subsequent quit attempt; in AU, awareness of toxins was associated with subsequent quit attempts. CONCLUSIONS: Following the implementation of innovative HWLs in AU & CA, awareness of toxic constituents and of smoking risks appears to increase over time. Toxic constituent awareness was associated with subsequent cessation behavior in AU, where the toxic constituent effects on health are prominently displayed on “standardized” tobacco packaging.

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nations for discrepancies between self-report and biochemical measures include misrepresentation of smoking or actual reductions in cigarettes per day offset by changes in smoking topography (i.e., compensatory smoking). Either way, these data suggest that many female smokers not only continue to smoke throughout pregnancy, but are exposing themselves and their offspring to a similar level of toxicants despite reports of reducing their smoking rate.

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PA24-1 MODIFIABLE RISK FACTORS FOR SMOKING IN PREGNANCY: A COMPARISON OF PREGNANT CURRENT AND FORMER SMOKERS USING NATIONAL SURVEY DATA
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Despite substantial efforts to reduce tobacco use during pregnancy, the prevalence of prenatal smoking has remained steady since 2000 (Tong et al., 2013). Accumulated evidence suggests that those who successfully quit during pregnancy appear to be characterized by a less risky constellation of sociodemographic and pre-pregnancy smoking factors compared to persistent smokers. However, these factors are predominantly non-modifiable and thus make poor intervention targets. Identifying modifiable factors may facilitate intervention design. Using a nationally representative sample, the present study examined predictors of quitting during pregnancy, and evaluated both non-modifiable and modifiable risk factors. Participants were pregnant women who participated in the National Survey on Drug Use and Health between 2004 and 2013 and reported smoking within the past year (N=3,252). Reporting no past 30-day cigarette use served as a proxy for smoking cessation during pregnancy. Logistic regression analyses examined a range of modifiable and non-modifiable factors, including sociodemographics, perceived health, smoking history and risk perception, distress and other mental health problems, substance use, criminal justice involvement, engaging in risky behaviors, and receipt of mental health/substance use treatment. Results identified a number of relatively modifiable factors as associated with cessation in the multivariate model, including past month binge drinking (OR = 0.33; 95% CI = 0.12, 0.80) and smoking risk perception (OR = 2.72; 95% CI = 1.65, 4.49). Notably, distress, depression, and illicit drug use were not associated with cessation. Population-level impacts on smoking cessation in pregnancy may benefit from high-reach interventions seeking to enhance risk perceptions. The failure of distress or depression to be associated with reduced likelihood of quitting once other factors are accounted for is consistent with other research in this area, and should be closely examined.

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PA24-2 CORRESPONDENCE BETWEEN SELF-REPORTED AND BIOCHEMICAL MEASURES OF CIGARETTE SMOKING IN PREGNANT WOMEN
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AIMS: The majority of female smokers are unable to quit on their own when they find out they are pregnant, but report reducing their cigarettes per day (CPD) by ~50% before entering prenatal care, typically ~6 weeks gestation. Without intervention, the majority will continue to smoke for the remainder of the pregnancy, but it is unclear whether they make additional reductions in smoking over the remaining ~34 weeks of the pregnancy and if so, whether the decreases are paralleled by changes in biochemical measures of smoking. To answer these questions, this study examined self-reported smoking rate and biochemical measures of smoking in pregnant women participating in clinical trials for smoking cessation. METH-ODS: Self-reported CPD, breath CO, and urine cotinine were collected at the intake assessment (~10 weeks gestation), at a second assessment 1 month later (Early Pregnancy Assessment), and again at the end of pregnancy (~28 weeks gestation: Late Pregnancy Assessment). RESULTS: Of 289 total trial participants, 156 (54.1%) reported smoking at each of these assessments and were included in the analysis. Self-reported CPD decreased from 10.6 to 7.0 and 7.6 at Intake and Early and Late Pregnancy Assessments, respectively (p < .001). Mean CO was 11.8, 10.7, and 11.3 ppm (p = .13) and mean urine cotinine was 1112.3, 971.7 and 1044.3 ng/ml (p = .004), respectively. CONCLUSIONS: Overall, self-reported CPD decreased ~31% while CO and cotinine declined only ~8%. Potential expla-

PA24-3 USING EXPIRED AIR CARBON MONOXIDE TO DETECT PREGNANCY SMOKING: VALIDATING A CUT-POINT AND ESTIMATING SMOKING AMOUNT
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BACKGROUND: Carbon monoxide (CO) in expired air samples is a non-invasive and cost-effective biochemical marker for smoking. Cut-points of 6ppm-8ppm in the general population have been established, however, increased metabolism and altered respiratory capacity likely affect cut-point validity in pregnancy. We recently reported preliminary findings that a lower 4ppm CO cut-point best identified pregnant smokers, regardless of trimester. The purpose of this study was to further validate, in a larger sample, an appropriate CO cut-point for pregnant smokers, and to examine if CO levels could accurately predict smoking amount. METH-ODS: Pregnant women (N=620) completed a validated self-report assessment of smoking, a urine drug screen (UDS) for cotinine, and provided an expired air sample. RESULTS: 44% of the sample reported smoking, and this was confirmed by UDS. Using traditional CO cut-points of 6ppm+ and 8ppm+, only 5% (6ppm+2%) and 7% (8ppm+) of non-smokers were incorrectly identified as smokers, but only 74% of 1 all smokers, and 84%/71% of those who had smoked at least 5 cigarettes in the previous 24 hours, were identified. However, at a cut-point of 4ppm+, only 9% of non-smokers were misclassified as smokers. In addition, 88% of all smokers, 96% who had smoked 5+ cigarettes in the previous 24 hours, and 98% who had smoked 10+ cigarettes in the previous 24 hours were identified. Most false positives involved marijuana use or high levels of environmental tobacco exposure. Finally, an equation was modeled on half the sample using CO levels to predict number of cigarettes smoked in the previous 24 hours. This equation fairly accurately predicted number of cigarettes smoked in the holdout sample (CI.6). CON-CLUSIONS: Based on these findings, a lower 4ppm CO cut-point appears to best identify pregnant smokers, further validating expired air CO as a valid, low cost, and non-invasive method for determining both smoking status and possibly daily smoking amount in pregnant women.

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PA24-4 THE EFFICACY OF A PROACTIVE SMOKING CESSATION OUTREACH PROGRAM ON PREGNANT AND PARENTING WOMEN
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OBJECTIVE: Although expecting or having a child can be a strong motivator for quitting smoking, cessation is still quite difficult to achieve with nearly half of pregnant women continuing to smoke during their pregnancy. Low-income pregnant smokers face greater barriers to quitting smoking. While quitting smoking will have individual benefits for any smoker, the impact of cessation can have further impact for those who are pregnant or parenting by protecting children from the dangers of secondhand and in utero exposures to tobacco smoke. We sought to examine the efficacy of a proactive smoking cessation intervention on women smokers who were pregnant and/or parents. METHODS: OPT-IN was a randomized controlled trial that showed proactive tobacco cessation outreach improved smoking cessation rates in a low-income population. The study recruited adult smokers aged 18-64 from the administrative databases of the state-subsidized
Minnesota Health Care Programs at baseline in 2011/12. The present analysis was restricted to women who reported that they had been pregnant in the past year and/or reported they had any children in their household under the age of 18 either at baseline or one-year-follow-up. We tested whether the intervention was effective for pregnant and/or parenting women using adjusted logistic regression models. RESULTS: The OPT-IN intervention was similarly effective for women who reported a recent pregnancy (as measured by 7-day, 30-day, and prolonged abstinence) compared to women who were not pregnant or parenting. However, women with children in the household under the age of 18 in the OPT-IN condition were more likely to report 30-day abstinence (OR = 1.53, 95% CI: 1.00, 2.37) and prolonged abstinence (OR = 1.72, 95% CI: 1.11, 2.70) compared to women not living with children under the age of 18. CONCLUSIONS: Pregnant and parenting women are an especially high priority population for tobacco control efforts given the potential benefits for both the women and their children. Proactive cessation outreach is effective in this population, and especially beneficial for low-income women who have children in their homes.

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PA24-5
PILOT STUDY FINDINGS OF PHONE-BASED POSTPARTUM CONTINUING CARE FOR LOW-INCOME PREGNANT SMOKERS
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Tobacco use among pregnant and postpartum women is the leading preventable cause of poor pregnancy outcomes and a major public health issue. A Phone-based Postpartum Continuing Care (PPCC) protocol was developed and pilot-tested to address postpartum smoking relapse among women who quit smoking during pregnancy and postpartum smoking increase among those who cut down. The sample for this randomized controlled trial was drawn from a single clinic. Data from in-person interviews and biochemical verification of smoking status (urine cotinine levels) were collected from participants at six time points. A total of 128 participants were randomized into the Control n=64 (referral to the 24/7 state quit line postpartum—the current standard of care) and the Intervention n=64 (standard of care + PPCC) groups. Most participants were African American (80.5%), never married (74.0%), and unemployed (78.0%) with an average age of 26 years (range 18-41). At intake, participants smoked an average of 7.3 tobacco products per day (TPD) and the average age of tobacco initiation was 15.7 years (range 9-29). Cotinine levels were significantly correlated with self-reported TPD at each time point (r range: 0.26-0.48, p<0.05). There were no differences in quit rates, past 90-day tobacco use and TPD between the two groups at intake. More participants in the Intervention group quit using tobacco at 6 weeks postpartum (36% vs 25%) and 3 months postpartum (26% vs 14%); however these differences failed to reach statistical significance (p=0.292 and 0.193, respectively). There was a significant decrease from intake in the number of days using tobacco in the past 90 at 6 weeks postpartum (53 vs 29 days), 3 months postpartum (53 vs 45 days), and 6 months postpartum (53 vs 40 days) in the Intervention group but no differences in past 90-day tobacco use within the Control group. Most women who quit or reduced smoking during pregnancy resumed use postpartum. The addition of an intensive PPCC from third trimester through the postpartum period did not increase tobacco abstinence in this population though past 90-day tobacco use was lower within the Intervention group, indicating some harm reduction.

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PA24-6
ASSESSING THE POSSIBLE ROLE OF INTRAUTERINE EFFECTS IN THE ASSOCIATION BETWEEN MATERNAL SMOKING DURING PREGNANCY AND OFFSPRING DEPRESSION USING PATERNAL SMOKING AS A NEGATIVE CONTROL: A CROSS-COHORT COMPARISON STUDY
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Offspring of mothers who smoke during pregnancy have greater risk of developing depression but it is unclear whether this association is due to intrauterine effects or to confounding. We aimed to investigate the possible role of intrauterine effects of smoking on offspring depression in three longitudinal studies using paternal smoking as a negative control. If the relationship is due to intrauterine effects, we would expect to see a stronger association between maternal smoking during pregnancy and offspring depression than between paternal smoking during pregnancy and offspring depression. We used data from the Avon Longitudinal Study of Parents and Children (ALSPAC) from the UK, the Nord-Trøndelag study (HUNT) from Norway and the Pelotas Birth Cohort Study from Brazil. Parental smoking during pregnancy was self-reported at the time of pregnancy in ALSPAC. In HUNT, parental smoking during pregnancy was assessed retrospectively. In Pelotas, maternal smoking was reported at the time of offspring birth and paternal smoking when the child was aged 4. Offspring depression was assessed at 18 years in ALSPAC with the Computerised Interview Schedule-Revised, at 36 years in HUNT using the Hospital Anxiety and Depression Scale, and at 30 years in Pelotas using the Mini-International Psychiatric Interview. Associations between parental smoking and offspring depression were assessed within each study using logistic regression, adjusted for sociodemographic factors. In fully adjusted analyses, there was some evidence that maternal smoking during pregnancy was more strongly associated with offspring depression than partner smoking in ALSPAC (N=3,100) (maternal: OR 1.44, 95% CI: 0.99, 2.07, paternal: OR 0.87, (0.63, 1.20)). In HUNT (N=20,197) and Pelotas (N=2,583), there was no clear evidence that maternal smoking during pregnancy was more strongly associated with offspring depression than paternal smoking (HUNT maternal: OR 1.14 (1.00, 1.30), HUNT paternal: OR 1.07 (0.95, 1.21), Pelotas maternal: OR 1.15 (0.87, 1.54), Pelotas paternal: OR 1.07 (0.79, 1.46)). Taken together, the results from the three cohorts do not provide clear evidence for an intrauterine effect of maternal smoking during pregnancy on offspring depression. We plan to incorporate further analyses of sibling pairs to strengthen these findings.

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PODIUM PRESENTATION 6: NICOTINE AND CUE REACTIVITY

PA25-1  NICOTINE SELF-ADMINISTRATION AND ASSOCIATED CUES IN ADOLESCENT RATS

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Approximately 90% of the millions of adult daily smokers in the US initiated tobacco product use during adolescence. We have recently observed that at low doses of nicotine (NIC) adolescent rats self-administer fewer NIC infusions than adult rats, suggesting that NIC is less potent as a primary reinforcer in adolescents. However, cues that accompany smoking are important and NIC can enhance responding for other reinforcing stimuli. Indeed, when NIC is self-administered along with a mildly reinforcing cue, the reinforcement-enhancement action of NIC is more powerful than the primary reinforcing action in driving behavior. Thus, we have begun examining NIC self-administration (SA) in adolescent rats when the NIC is delivered in combination with a mildly reinforcing visual stimulus (VS) consisting of a cue light turning on for 1-s and the chamber light turning off for 60-s. Previous research has shown that adolescent rats find this VS reinforcing and that this reinforcement is enhanced by injection of NIC. The present study sought to compare low dose NIC SA between adolescent and adult rats when NIC delivery is paired with either a mildly reinforcing cue (VS) or a neutral cue light (CL; 15-s white cue light) (n=8-9). Male rats were implanted with jugular vein catheters on postnatal day (P) 24-25 or P84-85, and began NIC SA on P30 or P90. Food and water were available ad libitum, except during 1-h SA sessions conducted during the dark phase. During SA sessions rats were allowed to nose poke for intravenous - cue light) (n=8-9). Male rats were implanted with jugular vein catheters on postnatal day (P) 24-25 or P84-85, and began NIC SA on P30 or P90. Food and water were available ad libitum, except during 1-h SA sessions conducted during the dark phase. During SA sessions rats were allowed to nose poke for intravenous infusions of NIC (10 ug/kg/inf) on a fixed ratio 2 reinforcement schedule for 16 daily sessions. When NIC infusions were paired with the VS, nearly all rats met the SA criteria, and adolescent rats earned more reinforcers than adults (25.3±3.3 versus 14.6±1.8, average earned per day during days 14-16, p<0.05). In contrast, when paired with the CL, adolescent rats did not acquire SA; ~50% of adults did meet acquisition criteria, earning an average of ~10 infusions. These results highlight the importance of considering cues that accompany NIC delivery when studying low-dose NIC SA behavior in rats.

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PA25-2  COMBINING PROXIMAL AND PERSONAL-ENVIRONMENT SMOKING CUES ENHANCES CUE-INDUCED CRAVING AND SMOKING BEHAVIOR, AND PREDICTS IMMEDIATE SUBSEQUENT SMOKING

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Cue reactivity (CR) research has reliably demonstrated robust cue-induced responding among smokers exposed to common proximal smoking cues (e.g., cigarettes, lighter). More recent work has shown that other distal stimuli present during smoking can also gain associative control over craving, most notably the actual smoking environments in which smoking previously occurred. Given that in the real world these cues are encountered simultaneously during smoking, a more accurate CR test of the impact of cues might be to present proximal cues in combination with the actual environments in which each smoker commonly encounters and/or avoids them. The present study involved examining the impact of combined proximal cues (smoking and neutral) + personal environment cues (smoking and nonsmoking places) on smokers’ subjective and behavioral cue reactivity. Further we sought to determine the extent to which the cue-induced craving predicts immediate subsequent smoking. Using a 2 Proximal (P+ and P-) x 2 Personal Environment (E+ and E-) within-subjects design, we examined 48 (24 F, 24 M) non-treatment seeking smokers’ reactivity to 4 different pictorial cue combinations (P+E+, P+E-, P+E-, P-E-). Post-trial craving was greater following the dual smoking cue combination relative to the other three cue combination exposures, p’s < .004. Similarly, dual combination of smoking cues led to significantly shorter post-trial latencies to smoke relative to the other cue combinations, p’s < .01. After controlling for participant age, education, and nicotine dependence, cue-induced craving difference score (post-trial craving minus baseline craving) was found to be predictive of subsequent immediate smoking indexed by: post-trial latency to smoke (B = -2.69, SE = 9.02; t143) = 2.98, p = .003; total puff volume (B = 2.99, SE = 1.13; t143) = 2.65, p = .009; and total number of puffs (B = .053, SE = .027; t143) = 1.95, p = .05). Collectively our findings demonstrate robust cue-provoked craving and smoking behavior following exposure to co-occurring proximal and distal smoking cues; and show that greater cue-induced craving can predict subsequent immediate smoking across several indices of smoking topography. This paradigm should be evaluated further as a measure of cue-sensitivity and a potential predictor of treatment outcomes.

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PA25-3  SEX DIFFERENCES IN CUE-RELATED BOLD ACTIVATION AND EFFECTIVE CONNECTIVITY IN SMOKERS

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Sex differences have been proposed to play a role in cigarette smoking and nicotine dependence. Past studies have shown that women exhibit greater cue-provoked craving, although men have greater cue-related activation in the hippocampus/amygdala than women. These results may inform sex differences in the acquisition or cessation of smoking behaviors. Here, we extend this research in a large sample of treatment-seeking smokers. Eighty-five adult smokers (46 women) were scanned with functional magnetic resonance imaging after smoking as usual. During the scan, subjects were pictures of smoking cues (e.g., lit cigarette) in a block-design. The main effects of smoking cues were examined across all subjects, and then differences between men and women were investigated using independent samples t-tests. Smoking cues activated the hippocampus and amygdala, medial superior frontal gyrus, ventromedial prefrontal and orbitofrontal cortex, subcallosal cortex, and the insula. Men had greater activation in the orbitofrontal and subcallosal cortex, nucleus accumbens, caudate, putamen, anterior and posterior cingulate, and the anterior hippocampus. Women had no activation greater than men, and there were no differences between men and women in self-reported craving. Blood oxygen-level dependent (BOLD) timecourse data was extracted from regions of interest including the anterior cingulate, insula, orbitofrontal cortex, caudate, hippocampus and amygdala in each subject, then entered into an effective connectivity analysis (Independent Multi-sample Greedy Equiv-alence Search). Men had stronger feed-forward connectivity from the caudate to the orbitofrontal cortex than women. These results are consistent with previous studies showing sex differences in smoking cue-related brain activation, and also suggest that, among men, the orbitofrontal cortex – which evaluates rewards in the context of decision making – is more strongly influenced by the caudate – which signals expected reward outcomes.

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PA25-4  BRAIN RESPONSES TO SMOKING CUES DIFFER BASED ON NICOTINE METABOLISM RATE

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BACKGROUND: Inherited differences in the rate of metabolism of nicotine, the addictive chemical in tobacco, affect smoking behavior and quitting success. The nicotine metabolite ratio (NMR, 3’-hydroxycotinine/cotinine) is a reliable measure of nicotine clearance, and a well validated predictive biomarker of response to pharmacotherapy. To clarify the mechanisms underlying these associations, we investigated the neural responses to smoking cues in normal and slow nicotine me-
tabolizers. METHODS: Sixty-nine treatment-seeking smokers (30 slow, 39 normal metabolizers) completed a visual cue reactivity task during functional magnetic resonance imaging on two separate occasions: once during smoking satiety and once following 24 hours of smoking abstinence. RESULTS: In whole brain analysis, normal (compared to slow) metabolizers exhibited heightened abstinence-induced neural responses to smoking cues in the left caudate, left inferior frontal gyrus, and left frontal pole. These effects were even more pronounced when extreme groups of slow and normal metabolizers were examined. Greater activation in the left caudate and left frontal pole was associated with abstinence-induced subjective cravings to smoke. CONCLUSION: Inherited differences in rate of nicotine elimination may drive neural responses to smoking cues during early abstinence, providing a plausible mechanism to explain differences in smoking behaviors and response to cessation treatment. Normal metabolizers may benefit from adjunctive behavioral smoking cessation treatments, such as cue exposure therapy.

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**PA25-5**

**EFFECTS OF NICOTINE ABSTINENCE, SATIETY, AND REPLACEMENT ON EMOTIONAL CUE REACTIVITY IN TREATMENT SEEKING SMOKERS: AN FMRI STUDY**

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BACKGROUND: Intermittent drug seeking and executive processes, responsible for self-control, may contribute to persistent smoking despite knowledge of negative consequences. Nicotine replacement therapy (NRT) may facilitate abstinence by attenuating the bottom-up affective processes associated with withdrawal and enhancing top-down cognitive control resources. Emotion-based decision-making and the capacity of the prefrontal cortex to control emotional responses is a critical component of addiction. The current study was designed to evaluate emotional reactivity following drug abstinence or satiety. Specifically, we evaluated the neural correlates of emotional cue reactivity during fMRI scans in treatment-seeking smokers following 24 hours of smoking abstinence or within 1 hour of smoking satiety. METHODS: Treatment-seeking smokers (cigarettes smoked per day [cpd] ≥ 10, FTND > 3) received 12 weeks of nicotine patch treatment. Those unable to quit during the two-week run-in period were randomized to complete an active treatment or control treatment. Participants were then randomized to complete three tasks: (1) a baseline task, (2) a nicotine replacement therapy (NRT) treatment condition, and (3) a satiety condition. The NRT condition followed smoking abstinence of at least 12 hours, and the satiety condition was designed to simulate smoking satiety. Participants were presented with a visual cue that predicted the active treatment condition or satiety condition. For the active treatment condition, participants were presented with a visual cue that predicted the delivery of nicotine via the nicotine patch. For the satiety condition, participants were presented with a visual cue that predicted the delivery of nicotine via the nicotine patch. RESULTS: Compared to the baseline condition, participants reported significantly lower craving and increased self-control in the NRT and satiety conditions. In the NRT condition, participants showed greater activation in the left caudate and left frontal pole, consistent with top-down cognitive control processes. In the satiety condition, participants showed greater activation in the right caudate and right frontal cortex, consistent with bottom-up affective processes. CONCLUSION: These findings suggest that nicotine replacement therapy and satiety can modulate emotional reactivity following drug abstinence or satiety. Future research is needed to further explore the neural correlates of emotional cue reactivity following drug abstinence or satiety.
**PODium PREsEntation 6: Interaction betWeen AlcohOl and Smoking**

**PA26-1 Natural History of Alcohol Use During Smoking Cessation**

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Three studies (CARE, Break Free, PNS) investigated the natural history of alcohol use, and coaction between alcohol use and smoking abstinence, during a smoking cessation attempt. CARE included 133 Caucasians, 140 African-Americans (AA), 140 Latinos; Break Free included 391 AAs; PNS included 182 Spanish-speaking Mexican-Americans. Smokers received nicotine patch therapy and cessation counseling. Alcohol consumption, binge drinking and probable alcohol abuse were assessed. Alcohol consumption was the average number of drinks per day in a week. In CARE and Break Free, binge drinking was how often participants consumed 5 or more drinks in the last 3 months. In PNS, binge drinking was measured for the last 30 days (≥5 drinks for males, ≥4 drinks for females). Probable alcohol abuse (Yes/No) was measured with the Patient Health Questionnaire. Alcohol use measures were collected pre-quit and post-quit out to 26 weeks. Analyses tested for changes in alcohol use and binge drinking from pre to post quit in each study. Changes in alcohol consumption decreased pre to post quit in CARE (p<0.001), Break Free (p<0.01), and PNS (p<0.01). Binge drinking decreased pre to post quit in Break Free (p<0.01), approached significance in CARE (p<0.10), but had no reduction in PNS. Participants meeting criteria for probable alcohol abuse decreased pre to post quit in CARE (p<0.05) and Break Free (p=0.001), but not in PNS. Moderation by abstinence (i.e., coaction) was found only for alcohol consumption in Break Free, with alcohol consumption decreasing more for those who were abstinent 26 weeks post-quit. In three studies, evidence was found that alcohol consumption decreased during a cessation attempt and generally remained low through at least 26 weeks post-quit day. Binge drinking and probable alcohol abuse decreased from pre to post-quit in CARE and Break free, but not in PNS. There was little evidence for coaction as decreases in alcohol use outcomes were generally not tied to smoking abstinence. The findings suggest that making a smoking quit attempt may reduce alcohol use, but that coaction between alcohol use and smoking abstinence is unlikely in the absence of treatment designed to promote coaction.

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**PA26-2 Novel Methods and New Insights in the Relationship Between Smoking and Drinking: Exploring Differences in Drug Cue Reactivity Using Nonlinear Response Surface Modeling**

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The association between smoking and drinking is robust across multiple levels of analysis, but we have yet to arrive at a definitive explanation for why this relationship exists. Cross-cue reactivity, an extension of the traditional cue reactivity framework in which one drug becomes a “conditioned” cue that can evoke urges to use a different drug, has been identified as a factor that may contribute to maintaining patterns of dual alcohol and tobacco use. However, questions have been raised about the clinical relevance of cue reactivity research more broadly since findings linking it to behavioral outcomes have been mixed. We suggest that the mixed findings to date may be partially attributable to limitations in the analytic methods typically applied in cue reactivity research, and that an alternative approach, termed response surface modeling, provides greater flexibility and may be helpful for overcoming some of these limitations. To illustrate its benefits, we apply this technique to data derived from several larger studies aimed at understanding the association between smoking and drinking. Urge to smoke and urge to drink were measured in response to alcohol, smoking and neutral cues presented in a variety of formats (pictorial, in vivo) and contexts (following administration of various combinations of alcohol and nicotine). Linear analyses indicated a strong positive relationship between alcohol dependence and drinking urge in response to alcohol cues (p = .002). In contrast, urge to smoke in response to neutral cues exhibited the strongest relationship with nicotine dependence. Inclusion of quadratic terms indicated that high levels of nicotine smoking and drinking urge were characterized by strong urges to smoke in response to both smoking and drinking cues (p = .025) with comparatively lower dependence among those with enhanced urge to either cue type alone. These findings suggest that alcohol dependence entails drug-specific reactivity, while nicotine dependence may be better characterized as a consolidation of urge responses to diverse sets of cues. Additional ways in which response surface models can be used to probe these relationships will be discussed.

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**PA26-3 Only Time Will Tell: Alcohol-Induced Smoking Urge and Behavior in a Longitudinal Investigation**

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Alcohol-induced smoking urge in the laboratory has been shown by our group to correlate with real-world alcohol-induced smoking behavior, but little is known regarding whether these effects change with time. We examined the relationship between smoking urge increases, as measured in a controlled alcohol-challenge laboratory paradigm, and alcohol-associated increases in smoking behavior, as assessed by increases in past month cigarettes smoked on heavy vs. non-drinking days. Participants were from the larger Chicago Social Drinking Project, which included an alcohol challenge at enrollment and identical reexamination 5 years later. At each phase, participants consumed an alcohol (.09 mg%) or placebo beverage, in random order. Scores from the Brief Questionnaire of Smoking Urges (BQSU) were summarized as net change scores of post- minus pre-drinking scores for placebo subtracted from alcohol session. Of the 64 initial testing smokers, n=36 (age 25.6) continued smoking at retesting at levels comparable to those at initial: Light Smokers (LS; n=26; ≤40 cigs/wk, range 1-39 cigs/wk) or Moderate/Heavy Smokers (MHS; n=10; ≥41 cigs/wk, range 46-140 cigs/wk). Results showed that alcohol produced significant increases in LS smoking urge, but MHS were not sensitive to alcohol’s effect (Group, p<0.01). LS exhibited greater net change urge increases than MHS at initial (+12.5 vs +1.6, respectively) and retesting (+8.9 vs -1.1). Alcohol-induced smoking urge at initial testing was positively associated with reported alcohol-related smoking behavior in LS (r=.40, p<.05), driven by male (r=.66, p<.05) and not female (r=.14, p>.63), but this relationship was not evident in MHS (r=.27, p>.46). At retest, this relationship was not evident in either LS or MHS. Results suggest that sensitivity to alcohol-induced smoking urge persists over time in LS but that MHS are less affected by acute alcohol consumption on smoking urge. These urge increases are associated with smoking behavior increases in lighter smoking young men, but, with continued smoking this relationship dissipates, suggesting that over time, multiple factors may account for smoking increases during drinking bouts.

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PA26-4
EXAMINING ALCOHOL AND MARIJUANA USE IN YOUNG ADULT DUAL USERS OF CIGARETTES AND E-CIGARETTES
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INTRODUCTION: Tobacco use among young adults is high, and prevalence of multiple tobacco product use (i.e., concurrent use of more than one tobacco product) in this population is now even higher than use of cigarettes alone. Limited studies indicate that multiple tobacco use is associated with elevated levels of risk-taking behaviors among young adults. This study examined differences between current, or past 30-day, ENDS (electronic nicotine delivery systems) only users and current dual users of ENDS and cigarettes on demographics, frequency of ENDS use, current alcohol use/binge drinking, current marijuana use, and on the risk-taking tendency of impulsivity. METHODS: Participants were 5,482 18-29 year old college students (M age=20.49; SD=2.36; 63.7% female; 36.4% non-Hispanic white, 11.1% Hispanic, 18.8% Asian, 8.8% African American/black and 4.9% other) attending one of 24 colleges in Texas. Students completed an online tobacco survey, which included images of products to facilitate recognition. RESULTS: 3.65% (n=200) of the sample were current ENDS-only users, and 3.10% (n=170) were current dual users of ENDS and cigarettes. T-tests indicated that compared with ENDS-only users, dual users were significantly more frequent alcohol users (p<.001), alcohol binge drinkers (p<.001), and marijuana users (p<.01). Dual users were also significantly older (p<.001). The two groups did not differ on sex, racial and ethnic categories, frequency of ENDS use, or risk-taking impulsivity. CONCLUSION: While there was no difference in risk-taking impulsivity between current dual users of ENDS and cigarettes and current ENDS users, findings indicate that current dual users engaged in greater levels of alcohol use, binge drinking, and marijuana use than current ENDS users. This is consistent with a small but growing body of research on young adult users of multiple tobacco products. Additional research is needed to better understand why dual users are engaging in high-risk behaviors, and the patterns and transitions of product use over time and their association with subsequent risk behaviors.

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PA26-5
THE IMPACT OF ALCOHOLIC BEVERAGE DRINKING BEHAVIOR ON SMOKING CESSATION IN A FACTORIAL DESIGN SMOKING CESSATION INTERVENTION
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BACKGROUND: Research has focused on tobacco cessation for people who drink heavily; however, evidence on the effects of moderate alcohol consumption (≤ 1 standard alcoholic beverage per day for women, ≤ 2 per day for men) on smoking cessation is limited. This study evaluated the effect of alcohol consumption on smoking cessation in a population of current smokers participating in a cessation intervention and assessed if specific interventions were more effective for smokers who consume alcoholic beverages. METHODS: Adult smokers (n=1,034) were recruited from a smoking cessation website to participate in a factorial design intervention of 5 cessation strategies. Information on alcohol consumption habits, tobacco use, and demographics was collected at baseline, and self-reported smoking cessation status was collected at 7 months. A gender-specific 3-category baseline alcohol consumption variable was created based on reported alcohol intake patterns over the previous year to indicate none, moderate, and heavy drinkers. Bivariate analysis and multivariate logistic regression models were developed to account for intervention effects, demographics, perceived health status, cigarette smoking intensity, positive and negative moods. RESULTS: Most participants reported alcohol consumption; 15% were categorized as heavy and 61% as moderate. Twenty-four percent of the respondents reported being non-drinkers (23.8%). At 7 months, baseline moderate and heavy drinkers were 1.9 and 2.0 times more likely to report smoking (AOR 95% CI=1.1-3.2 and 1.2-3.2 respectively). No combination of interventions significantly increased the odds of smoking cessation at 7 months among drinkers. CONCLUSION: These results suggest that even moderate drinking habits can affect tobacco cessation success. Because moderate and heavy alcohol use may affect the likelihood of successful smoking cessation, additional research is needed to determine the successful smoking cessation strategies for moderate and heavy drinkers. Clinicians should also be aware of the relationship between alcohol use and smoking cessation and attempt to provide tailored resources for drinkers trying to quit smoking.

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PA26-6
CONCURRENT TREATMENT FOR SMOKING CESSATION AND AT-RISK DRINKING
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Tobacco and alcohol use are linked behaviors that individually and synergistically increase the risk for negative health consequences. Some research suggests that targeted interventions can promote coaction, the likelihood that change in one behavior (smoking) increases the probability of change in another behavior (alcohol use). This study was a two-group, randomized clinical trial evaluating the efficacy of a behavioral intervention, “Motivation And Problem Solving” (MAPS), designed to concurrently address smoking cessation and reduction of at-risk drinking. MAPS is an empirically-based treatment that combines motivational enhancement and cognitive behavioral/problem-solving approaches. Puerto Ricans (N=202) who were smokers and at-risk drinkers were randomly assigned to standard MAPS treatment focused exclusively on smoking cessation (ST), or MAPS+, which focused on smoking cessation and at-risk drinking reduction. Participants received 7 phone treatment sessions. Smoking outcome was N=202 day point prevalence. Drinking outcomes were: total number of at-risk drinking behaviors, heavy drinking, binge drinking, and drinking and driving. MAPS+ did not have a significant main effect on reducing at-risk drinking relative to ST, however, smoking status moderated the effect of MAPS+ on several drinking behaviors. Among individuals who quit smoking, MAPS+ reduced the number of drinking behaviors and the probability of meeting criteria for heavy drinking relative to ST, and appeared promising for reducing binge drinking. There were no significant effects for individuals who were unsuccessful at quitting smoking. MAPS+ showed promise in reducing at-risk drinking behaviors among Puerto Rican smokers who successfully quit smoking, consistent with treatment enhanced coaction. Integrating an alcohol intervention into smoking cessation treatment did not reduce engagement in treatment or hinder cessation outcomes, and positively impacted drinking among individuals who quit smoking. Findings speak to the promise of multiple health risk behavior change interventions and the feasibility of disseminating this treatment to quitlines and other population based-health care settings.

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The co-occurrence of alcohol use and waterpipe (WP) smoking is quite common among young adults. It is estimated that WP smokers are more than twice as likely to use alcohol and frequently consume alcohol immediately before or during a WP smoking session. However, it is unclear what impact alcohol has on WP smoking patterns and resultant exposure to tobacco-related toxins. The current study is a first step in addressing this research gap. Patrons from two WP lounges (one served alcohol the other did not) located in a South Central Metropolitan area were invited to participate in the study. Participants meeting inclusion criteria (≥18 years old, intending to smoke WP) were invited to complete a brief questionnaire, as well as carbon monoxide (CO) and breath alcohol content (BrAC) testing before entering and upon exiting the WP lounge. Nineteen participants (M=28.42, 74% male, 68.5% White) completed the study. The majority of participants (73.7%) self-reported drinking prior to visiting the WP lounge (M=2.23, SD=2.42; M_{WPBoost}=0.02, SD=0.03) and 68.4% reported drinking while at the WP lounge (M_{WPBoost}=1.73, SD=0.73; M_{BrAC}=0.03, SD=0.03). Almost one-third of participants self-reported drinking while smoking WP in order to “increase their buzz,” indicating some intentionality in their dual use. Participants displayed a mean CO boost of 47 ppm during the hookah session. A one-way ANOVA was conducted to examine differences in CO boost at differing BrAC levels (low, medium, high). While not significant, a trend emerged such that participants with the highest BrAC displayed the highest CO boost (M_{BrAC}=27.20, SD=12.54; M_{WPBoost}=0.063, SD=0.02) compared to both the medium (M_{BrAC}=23.67, SD=19.65; M_{WPBoost}=0.026, SD=0.01) and low (M_{BrAC}=18.75, SD=9.95; M_{WPBoost}=0.005, SD=0.01) BrAC groups. This pilot study begins to address the lack of research on the impact of alcohol on WP smoking behaviors and resultant toxicant exposure. Larger and more controlled studies should examine whether alcohol consumption significantly increases WP abuse liability, exposure to CO, nicotine, and other tobacco-related constituents.

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**PA27-1**

**SMOKING TRENDS AMONG ADULTS WITH BEHAVIORAL HEALTH CONDITIONS IN INTEGRATED HEALTHCARE: A RETROSPECTIVE COHORT STUDY**

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BACKGROUND: Impressive gains have been made in recent decades in reducing the overall smoking prevalence in the US. Yet, individuals with behavioral health conditions (BHCs) continue to smoke at high rates, are less frequently advised to quit, and have limited success with quitting. This study tested whether smoking disparities exist among individuals with BHCs within an integrated healthcare delivery system with convenient access to tobacco treatments. METHODS: The sample consisted of patients with >1 of the five most prevalent BHCs in 2010 in an integrated healthcare delivery system (n=155,733; depressive disorders, anxiety disorders, substance use disorders, bipolar spectrum disorders, and attention deficit hyperactivity disorder (ADHD)) and patients without BHCs matched on age, sex, and medical home facility (n=155,733). The odds of smoking in patients with versus without BHCs were examined over four years using logistic regression generalized estimating equation models. Tobacco cessation medication utilization among smokers in 2010 was also examined. RESULTS: Adults with BHCs were significantly more likely to smoke at baseline (2010) relative to matched adults without BHCs (Depressive disorders: 18% vs. 10%; Anxiety disorders: 18% vs. 10%; Substance use disorders: 43% vs. 12%; Bipolar spectrum disorders: 29% vs. 11%; ADHD: 19% vs. 12%; all p's<.001). Although smoking prevalence decreased from 2010 to 2013 overall, the likelihood of smoking among those with BHCs relative to matched adults without BHCs was higher across all time points (p's<.001), most notably among patients with substance use disorders (beta = .11, SE = .01, p < .001), depression (beta=.04, SE=.01, p<.001), and bipolar spectrum disorders (beta = .04, SE = .02, p < .001). Tobacco cessation medication use in 2010 was low, and smokers with BHCs were more likely than non-BHC smokers to utilize these products (6.2% versus 3.6%, p<.001). CONCLUSIONS: The likelihood of smoking is decreasing more slowly among individuals with versus without BHCs even within an integrated healthcare system. Findings highlight the need to prioritize smoking cessation within specialty behavioral health treatment.

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**PA27-2**

**SYSTEM CHANGES TO SUPPORT ADOPTION OF TOBACCO USE TREATMENT GUIDELINES IN HEALTH CARE SETTINGS SERVING DISPARATE POPULATIONS: A COMPARISON OF BEHAVIORAL VS MEDICAL HEALTH CARE DELIVERY SYSTEMS**


OBJECTIVE: Implementing system changes (e.g. decision support, clinical information systems (CIS), self-management support) that are components of the Chronic Care Model (CCM) is associated with improvements in tobacco use treatment (TUT). We compared the extent to which system changes, specific to TUT and defined by the CCM, were implemented among NYC behavioral healthcare organizations (BHCOs) and medical organizations (MHCOS), METHODS: Health-care administrators completed a survey that assessed the degree to which sites had implemented each of the six CCM components for TUT. Among nineteen sites, ten were MHCOS (e.g. Federally Qualified Health Centers) and nine were BHCOS (e.g. Article 31). We assessed CCM integration by summing the six aggregated CCM component scores (each ranged from 0-1, maximum score was 6) to create a single continuous variable. A t-test was used to compare CCM integration be-
between BHCOs and MHCs. Interviews with the BHCOs administrators assessed barriers to integrating CCM-related changes specific to TUT. RESULTS: MHCs had integrated significantly more CCM components for TUT compared with BHCOs (3.40 v 1.96; p<0.01). When individual components were analyzed, MHCs were significantly more likely to have implemented four key components including decision support, delivery system design, CIS, and community linkages compared with BHCOs. Self-management support was the only component that was integrat-ed equally between the two types of organizations. Barriers to integrating the CCM and TUT guidelines included low reimbursement rates for tobacco services com-pared to behavioral health services, conflicting regulatory standards and reporting requirements for TUT, organizational culture not supportive of TUT, and low EHR adoption rates. CONCLUSIONS: BHCOs in NYC were less likely to have imple-mented CCM-related system changes that are associated with adherence to TUT guidelines than MHCs. Findings point to a need to focus technical assistance and resources toward addressing gaps in CCM-related system changes and other barriers to TUT adoption that are unique to BHCOs in order to address disparities in tobacco use in this high risk population.

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PA27-3
THE IMPACT OF NEW CMS PSYCHIATRIC FACILITY TOBACCO MEASURES ON INPATIENT CARE
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BACKGROUND: On January 1, 2015 CMS required psychiatric units to report to-bacco treatment provided to inpatients within 36 hours of admission. TOB-1 mea-sures the proportion of patients screened for tobacco use. TOB-2 measures the proportion of tobacco users who receive or refuse counseling to quit, and receive or refuse cessation medications. TOB-2a, a subset of TOB-2, measures the pro-portion of tobacco users who actually receive medication and/or counseling. The impact of this policy on providers, tobacco treatment, and outcomes has yet to be evaluated. METHODS: This case study describes the changes to the Electronic Health Record (EHR), nursing protocols, and tobacco treatment staff protocols. EHR data was collected retrospectively for psychiatric inpatient admissions in the first two quarters of 2015. RESULTS: Hospital organizational improvement staff initiated systems changes in late February of 2015 in response to poor measure performance. First quarter solutions included psychiatric staff training, daily mon-itoring of screening/treatment, and prompting unit staff to take action. Second quarter systems changes included inserting “smart notes” into the EHR to ensure high-quality documentation, and strengthening linkages between unit staff and hospital tobacco treatment staff. In the first quarter of 2015, the psychiatric unit screened 96% of patients for tobacco use (TOB-1), had 0% of smokers either refuse or accept counseling or medications (TOB-2), and provided 0% with some form of treatment (TOB-2a). In the second quarter, the unit screened 99% for to-bacco use, had 67% of patients either refuse or accept counseling or medications, and provided 51% with some form of treatment. This presentation will also de-scribe barriers to treatment, predictors of treatment, and acceptance of referral to quitline post-discharge. CONCLUSIONS: The new CMS policy may have changed how this psychiatric unit addresses tobacco use; some of the effect is likely due to improved documentation. Additional findings from the University Hospital Consor-tium will provide insight into variation in psychiatric unit response.

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PA27-4
SMOKING CESSATION OUTCOMES AMONG SMOKERS WITH CO-MORBID MENTAL HEALTH AND CHRONIC CONDITIONS ENROLLED IN A TOBACCO QUITLINE
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BACKGROUND: Smokers with co-morbid health conditions are at a high-risk group with a disproportionate burden of illnesses. Little is known about associations be-tween chronic and/or mental health conditions and smoking outcomes among indi-viduals utilizing quitline services. Purpose: To examine quit rates among Arizona Smokers’Helpline (ASHLive) callers reporting ≥1 chronic health condition (CHC) and/or mental health condition (MHC). METHODS: N=12,645 callers completed enrollment and 7m follow-up (January 2011 - April 2015). Demographics and the number of comorbid conditions were obtained at enrollment. Callers were categorized as (a) CHC only (CVD/respira-tory-related, cancer), (b) MHC only (mood/anxiety, substance dependence), (c) CHC and MHC or (d) NHC (no reported co-morbidity). 30-day abstinence was obtained at 7m follow-up. Callers received at least one counseling session and ASHLive-provided or navigation to NRT services. Logistic regression was used to analyze predictors of quit outcomes, after controlling for theoretically-relevant variables, between the type of comorbid condition and the frequency of CHCs stratified by MHC. RESULTS: Over 68% had ≥1 CHC and 33% reported a MHC; 64% of MHC callers also reported an existing CHC. Multivariate analysis indicated no significant differences in quit rates between CHC and NHC groups. Having ≥1 CHC did not reduce the odds of quitting. However, compared to NHC callers, those reporting a co-morbid condition (CHC and MHC) (OR=1.97; CI=0.99,6.01) and MHC only (OR=2.01; CI=0.93,4.66) were less likely to achieve 30-day abstin-ence. Furthermore, odds of quitting decreased among MHC callers with >1 CHC (≥3 CH: OR =0.60; CI = 0.482-0.746). DISCUSSION: Results indicate that while having a CHC does not lower quit rates, smokers with MHC and/or CHC and MHC are less likely to quit compared to NHC. These results reinforce the need for more intensive and perhaps tailored evidence-based counseling services among quit-lines to address specific barriers that MHC smokers may face in order to improve quit rates within this high-risk sample.

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PA27-5
INVESTIGATING CAUSALITY IN ASSOCIATIONS BETWEEN SMOKING AND SCHIZOPHRENIA
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BACKGROUND: Smoking is strongly associated with schizophrenia, and although historically it has been assumed that such an association is due to self-medication, more recently evidence has suggested that smoking might also be a risk factor for schizophrenia. We aimed to investigate this further using existing publicly available GWAS data for smoking initiation, and schizophrenia case status. METHODS: We performed a two sample bi-directional Mendelian randomisation study using sum-mary level genome-wide data on single nucleotide polymorphisms (SNPs) robustly associated with smoking initiation, and schizophrenia case status. This data was obtained from publicly available resources online. We took beta coefficients and standard errors for each SNP-exposure and SNP-outcome measure. These were then combined using an inverse-variance weight fixed-effects approach, in both directions. When smoking initiation was the exposure, all the SNPs associated with smoking initiation were highly correlated, so this was accounted for in the model. RESULTS: In 34,241 schizophrenia cases and 45,604 controls, there was evidence in support of a causal association between smoking initiation and risk of schizophrenia. The odds ratio for schizophrenia in those who were ever smokers (confounded by 4 SNPs which reached genome-wide significance in the GWAS of smoking initiation) was 2.21 (95% CI 1.38, 3.52). Conversely, in 143,023 individuals in the TAG GWAS, there was evidence in support of a causal association between risk of schizophrenia and smoking initiation. The odds ratio for risk of ever smoking conferred by 81 SNPs reaching genome-wide significance in the schizophrenia PGC2 GWAS was 1.05 (95% CI 1.01, 1.09). MR Egger was run as a sensitivity analysis, and found no evidence for pleiotropy on the associa-tion between schizophrenia and risk of smoking initiation (intercept 0.002, 95%
PA28-1

PHYSICAL DESIGN CHARACTERISTICS OF LITTLE FILTERED CIGARS AND CIGARILLOS

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BACKGROUND: Physical characteristics of tobacco products, such as product weight, are used to distinguish between tobacco product lines. These physical parameters have regulatory implications, as they are used in determining federal and state tax bracket classifications. Despite this, little data exists on the design characteristics of little filtered cigar and cigarillo (LCC) products. This project measured the physical parameters, pH, pressure drop and ventilation of Swisher Sweets and Cheyenne little filtered cigars (LFC), and Swisher Sweet and Black and Mild cigarillos (unflavored and grape). METHODS: LCC products selected compared the domains of anhedonia, depressed affect, somatic symptoms, and interpersonal difficulties as predictors of cessation outcomes and avoidance motives for smoking were assessed as part of the baseline survey. RESULTS: None of the LFC products tested had a significantly different rod diameter or total length from any of the Marlboro brands tested (p<.05). Swisher Sweet LFCs were not significantly different from Marlboro menthols in total weight (p>.05). Similar to the Marlboro products, all LFC products had a filter (cigarillos did not). Swisher Sweet LFCs (unflavored) were similar to Kentucky reference cigarettes in ventilation pressure, while Cheyenne LFCs (unflavored) were similar to Marlboro menthols in ventilation percentage (p>.05). Black and Mild cigarillos did not differ from any of the Marlboro products in pH (5.4, p>.05), while all LFCs and Swisher Sweet cigarillos had higher pH (6.3-6.5). CONCLUSIONS: While regulatory discrepancies persist between the treatment of LCCs and cigarettes, these results suggest that there is overlap in the physical properties of these products. These similarities suggest stricter regulatory oversight of LCC products may be warranted.

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PA28-2

SUBTYPES OF LITTLE CIGAR/CIGARILLO SMOKING: UNDERSTANDING PATTERNS OF USE AND PERCEPTIONS OF RISKS AMONG YOUNG ADULT CIGARETTE SMOKERS

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Little cigars and cigarillos (LCCs) are flavored cigarette-like products that are enticing alternatives to traditional cigarettes. Preliminary studies suggest that though some young adults smoke LCCs “as is” (with its tobacco), others smoke them as blunts (hollowed cigars with marijuana) or as those that have been hyped or fucked (a paper wrapper where the inner liner or “cancer paper” has been removed). The subtypes of LCC use are not well understood, and are important to examine as they may present with unique risk perceptions that should be addressed. This study sought to understand and assess the subtypes of LCC use, as well as beliefs and perceptions associated with use among a sample of U. S. young adult cigarette smokers. We report data from a 2014 cross-sectional survey that assessed the subtypes of LCC use among a sample of 948 white (72.7%), Hispanic (18.0%) and African American (9.3%) young adult (aged 27.4 years, SD=4.4; 60.3% female) cigarette smokers with a history of LCC use from across the United States. Of the 948 respondents, 29.3% were past 30-day LCC “as is” smokers, 7.4% were past 30-day altered, and 31.2% were past 30-day blunt smokers. Increased odds of past 30-day LCC smoking were found for males (OR=1.87, CI=1.23, 2.83), African Americans (OR=2.25, CI=1.00, 5.11) or Hispanics (OR=3.18, CI=1.71, 5.91), and 30-day cigarette smokers (OR=9.12, CI=1.14, 3.23). Increased odds of past 30-day blunt smoking were found for those who were young, male (OR=3.50, CI=1.27, 2.84), African American (OR=3.73, CI=1.9, 7.20), and were past 30-day cigarette smokers.

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smokers (OR=2.37, CI=1.40, 4.04). Respondents who perceived that LCCs aided in cessation, were safer to smoke, less addictive, and had fewer chemicals than cigarettes had increased odds of past 30-day LCC and blunt smoking. Respondents who perceived that altered LCCs were safer to smoke than cigarettes also had increased odds of past 30-day altered LCC use. Subgroups of LCC smokers present with unique perceptions about risk that should be addressed targeted in anti-cigar health communication messages.

**PA28-3**

CHARACTERISTICS AND CONCURRENT SUBSTANCE USE BEHAVIORS OF HIGH SCHOOL YOUTH WHO "FREAK" CIGARS, CIGARILLOS, AND LITTLE CIGARS

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BACKGROUND: An increase in cigar use rates among American adolescents and young adults have been observed in recent years. There is evidence that some cigar, cigarrillo, and little cigar (CCLC) users may perceive the product to be less harmful and a less addictive alternative to cigarettes, possibly due to modification of CCLC's before smoking. While investigation of blunts has grown, less is known about "freaking" or "hyping", the process of removing tobacco from the cigar, extracting the filter paper, and replacing tobacco. This study sought to understand the characteristics and concurrent substance use behaviors of high school youth who freak CCLC.

METHODS: This study used data from the 2013 Cuyahoga County Youth Risk Behavior Survey (n=16,855). Past 30-day (i.e. current) CCLC use, freaking, and blunting was assessed. Sub-analysis focused on youth who only reported CCLC use (CO), CCLC and freaking (CF), and freaking only (FO); we excluded youth who reported current blunt use. RESULTS: Overall, 15.2% reported current CCLC use, 11.0% report current freaking, 16.9% reported current blunting, and 4.5% reported using all three; 23.1% of all youth reporting current use of at least one product. Of these, 70.1% reported some sort of modification of CCLC. Males, non-whites and lower SES youth were more likely to report current freaking. Rates of cigarette and marijuana use were similar between CCLC users and freakers. Of those who indicated freaking, only 67.8% reported current CCLC use. There were no significant differences in demographic characteristics among freakers who did and did not report CCLC use (CF v. FO); however, CF were more likely to smoke cigarettes compared to FO (51.7% vs. 6.1%). DISCUSSION: A majority of youth who use CCLC are modifying them in some way. Further, almost one-third of youth who freak did not consider themselves a CCLC user, indicating that current measures of CCLC use may be underreporting certain users. Future research needs to better understand modification behavior of CCLCs and its policy implications.

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**PA28-4**

TRENDS IN PAST 30-DAY CIGAR USE PREVALENCE: WHAT IF BLUNT USE WAS CLASSIFIED AS CIGAR USE?

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INTRODUCTION: Cigars and blunts (cigars with marijuana in them) are not consistently distinguished in the scientific literature or by users. Some consider blunt use to be a form of cigar use because of the nicotine exposure from the cigar wrapper. To assess the potential impact of classifying blunt use as cigar use, we report trends in past 30-day cigar use prevalence, excluding and including blunts, by race/ethnicity and age group using data during 2004-2013 National Survey on Drug Use and Health. METHODS: We report trends of past 30-day cigar prevalence including and excluding blunt-only users among 334,300 youth (12-17) and young adults (18-25) who self-identified as non-Hispanic (NH) White, NH Black, or Hispanic. We used orthogonal polynomials to test for trends; p<0.05 was considered statistically significant. RESULTS: Among youth aged 12-17 during 2004-2013, cigar prevalence excluding blunt-only use significantly decreased among NH White (5.3%-2.7%), NH Black (3.5%-1.8%), and Hispanic (4.0%-1.8%) youth; however, cigar use prevalence including blunt use significantly decreased among NH White youth (7.7%-5.6%), but did not significantly decrease among NH Black (7.2%-6.6%) or Hispanic (6.5%-5.0%) youth. Among young adults aged 18-25 during 2004-2013, cigar use prevalence excluding blunt-only use significantly decreased among NH White (13.8%-11.6%), NH Black (14.4%-10.5%), and Hispanic (10.1%-7.3%) young adults; however, cigar use prevalence including blunt use did not significantly decrease among NH White (19.6%-19.4%), NH Black (23.3%-21.3%), or Hispanic (13.6%-15.1%) young adults. DISCUSSION: During 2004-2013, declines were observed in cigar use prevalence excluding blunt-only use for youth and young adults; however, cigar use prevalence including blunt use declined among NH White youth only, with no change among other racial/ ethnic groups or young adults. Additionally, cigar use prevalence excluding blunt-only use was consistently lower than cigar use prevalence including blunt use. Including blunt use in definitions of cigar use may impact estimates and trends, and is an important consideration for tobacco and marijuana surveillance.

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PA28-6
THE SHIFTING RELATIVE UPTAKE AND USE OF SNUS BY SMOKERS AND NON-SMOKERS IN NORWAY: WHAT WILL BE THE IMPACT ON PUBLIC HEALTH?

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Ever-smokers have for a long time made up the largest segment among snus users. However, as smoking is declining, the relative size of ever-smokers among snus users has been reduced. Never-smokers might become the largest future consumer base for snus use. Thus, the potential tobacco harm reduction effects from snus will increasingly take place through its effect on smoking initiation, while its effect from smoking cessation eventually will diminish. In this oral presentation we intend to identify the changes in the relative size of smokers and non-smokers among ever users of snus, and thus discuss our findings within a public health perspective. If non-smokers tend make up an ever-increasing share among the snus users, we will discuss if the net effect on public health from making snus available could change from possibly positive to possibly negative. The public health assessment of the availability of snus (or any other alternative nicotine product to cigarettes for that matter) should take into consideration the stage of diffusion for the products in question. A reasonable question to ask is what proportion of non-smokers relative to smokers among the users of an alternative nicotine product would mark the tipping point from a net gain to a net loss for public health?

Given the assumed risk difference between snus and cigarettes, and given the user-configuration of snus in the current diffusion stage, a logical conclusion would be that the availability to snus must have produced a net gain to public health in the current stage of diffusion. That is because our data shows that the combined numbers who have either i) quit smoking by the help of snus, ii) or who have reduced smoking intensity by substituting cigarettes for snus, or iii) who have picked up snus instead of cigarettes, have outnumbered the segment of snus users who in the absence of snus would have remained tobacco-free. Thus, health gains from smoking cessation, smoking reduction and smoking substitution produced by snus, has more than out-weighted the health loss produced from the relatively small fraction of the never-smokers (those not susceptible for uptake of cigarettes) who have started to use snus. Consequently, in Norway as by now, snus seem to have saved more lives than the product possibly might have taken. However, it is possible that there could be a tipping point in the future as ever-smokers will make up a steadily declining share in the reservoir of potential snus users.

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EARLY CAREER INVESTIGATOR SESSION

CIPA-1
NICOTINE WITHDRAWAL AND ANHEDONIA: CLINICAL RELEVANCE OF A NEURAL INDEX OF MOTIVATIONAL STATE

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Converging evidence from both human and animal research indicates the effect of nicotine withdrawal on non-drug rewards plays a crucial role in the development and maintenance of dependence. Although clinical research exploring the role of anhedonia in smoking and smoking relapse has expanded rapidly over the past decade, little work has examined the neurobiological underpinnings of these effects in humans. The present study examined the effects of nicotine withdrawal on electroencephalogram (EEG) alpha asymmetry (8-13 Hz) over frontal cortical regions at rest, an established neural index of approach/avoidance motivational state that is also believed to relate to depression risk. Heavy smokers (N = 48) attended two laboratory sessions following overnight abstinence, during which they smoked either three nicotinized (0.6 mg yield) or denicotinized (0.05 mg yield) cigarettes over a 3 hour timeframe. EEG activity was recorded in two separate eight-minute blocks at each session, immediately following the second and third cigarettes. Results indicated that nicotine withdrawal produced a shift towards greater left hemisphere alpha activity (p < .001), like the pattern that is seen among individuals with depression and consistent with the notion that nicotine withdrawal induces an anhedonic state. Lower asymmetry scores, indicative of an avoidance-based motivational style, were associated with greater craving to smoke (p = .008), higher negative mood (p = .011), larger average puff volume when smoking (p = .007), and less time between puffs (p = .002). Asymmetry effects were larger among those with low motivation to quit (p < .001) and individuals with high baseline approach motivational tendencies (p < .001). Overall, these findings: (a) highlight a plausible neural mechanism through which nicotine withdrawal might induce an anhedonic state; (b) document associations between motivational state and clinically-relevant smoking variables; and, (c) identify several subgroups of individuals at greatest risk for experiencing these effects.

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CIPA-2
MITOCHONDRIAL STRESS AND INFLAMMATION FOLLOWING EXPOSURE TO ELECTRONIC CIGARETTE AEROSOLS

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Electronic cigarettes (E-cigs) are currently thought of as a safer alternative to conventional cigarettes. This paradigm arises primarily due to recent studies analyzing the composition of E-cig aerosols which typically exhibit much lower levels of toxins and carcinogenic compounds compared to what is observed in conventional cigarette smoke. However, despite these findings the biological effects of E-cig aerosols exposed directly to lung tissues and cells is not well understood. To test the possibility that lung cells are susceptible to damaging effects by E-cig aerosols, we utilized an Air-Liquid Interface (ALI) culture system which recapitulates the moist and dynamic environment of the lung. Human lung cells directly exposed to E-cig aerosols within the ALI exhibit a 112% increase in the level of total DNA damage associated with elevated γH2AX and altered levels of activated p53. Relative levels of mitochondrial superoxide anion (mtO2-2) are significantly increased based on fluorescent intensity measurements in live cell images captured shortly after aerosol exposures. We also confirm that elevated mtO2- promotes an inflammatory cell state since E-cig aerosols lead to an increase in human fibroblast HFL-1...
cell pro-inflammatory cytokine secretion of IL-8 and IL6. Additionally, the increase in mtO2- coincides with a reduced expression of mitochondrial complex II major subunit suggesting impairment of electron transport chain function in response to E-cig. Together, these results indicate that e-cig aerosols lead to increased oxidative stress, particularly within the mitochondria. The observed increase in mitochondrial oxidative stress appears to occur in part due to the production of superoxide anion (O2-). Excessive production of reactive oxygen species (ROS) such as O2- commonly occurs in conjunction with an inflammatory response which in a chronic setting is associated with progression of lung diseases associated with long-term tobacco smoking. Nicotine and flavor additives in E-cig aerosols contribute to encouraging frequent use of these products by consumers. Our data highlights the potential deleterious effects of E-cig aerosol exposure to lungs and importance in continuing to elucidate direct cell and tissue responses to E-cig aerosols in the pathogenesis of chronic pulmonary diseases.

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CIPA-3

E-CIGARETTE AVAILABILITY, PROMOTIONS, AND MARKETING AT RETAIL TOBACCO OUTLETS IN THE CONTIGUOUS U.S., 2014

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E-cigarette sales and use among adults and youth in the United States have grown rapidly in a short time. Understanding trends in where e-cigarettes are sold and promoted may inform policies to regulate e-cigarette marketing. Change in their retail availability was tracked using data from audits of a nationally representative sample of tobacco retailers (n=2,276) conducted in 2012 and 2014. Additional data about flavors, advertising and price promotions (e.g., $1.00 off) from the 2014 audits are reported. Mixed-effects logistic regression was used to examine store and state policy level determinants of e-cigarette availability in 2014. The percent of stores that sold e-cigarettes doubled from 34.1% in 2012 to 69.2% in 2014, and only 2.8% of stores abandoned the product. In 2014, 67.4% of stores that sold e-cigarettes (n=1589) sold flavored varieties other than menthol. Exterior ads for e-cigarettes appeared at 35.3% of stores, and ads were placed at child eye level (below 3 feet) in 16.4% of stores, and branded header rows on shelving units at 9.1% of stores. Price promotions for e-cigarettes were observed infrequently, at only 10.8% of stores. In 2014, the advertised price of Marlboro (which is a proxy for state and local excise taxes) was associated with lower odds of a store selling e-cigarettes (OR 0.86, 95% CI 0.77, 0.97). State Smoke-Free Air Grade was not associated with e-cigarette availability. Pharmacies, supermarkets, and liquor stores were significantly less likely than convenience stores to sell e-cigarettes in 2014, while tobacco stores were significantly more likely. E-cigarettes, including flavored products that appeal to youth, are now widely available and advertised at the point of sale. A doubling of retail availability for e-cigarettes in two years may reflect a broad expansion of the market into more retail stores overall, possibly driven by the acquisition of e-cigarette brands by major tobacco companies. Contrary to previous studies, retail availability of e-cigarettes has moved beyond states with weaker tobacco control policies where rates of smoking prevalence are higher.

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POS1-1
ASSOCIATION OF MAJOR DEPRESSIVE DISORDER AND SUBSTANCE USE DISORDERS WITH HEALTH RELATED QUALITY OF LIFE AMONG DAILY SMokers IN RESIDENTIAL SUBSTANCE USE TREATMENT

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INTRODUCTION: Substance use disorders (SUD) and Major Depressive Disorder (MDD) are common comorbidities among adult smokers and affect health related quality of life (QOL). Although poor health related QOL is prominent among low-income daily smokers with comorbid conditions, the respective contributions of MDD and SUD to specific domains of health related QOL is unclear. The current study aims to examine the contributions of MDD and SUD to specific domains of health related QOL in a population of low-income daily smokers in residential treatment for substance use. METHODS: Participants: 100 smokers in residential treatment for substance use enrolled in a smoking cessation trial (87% African-American, 69% male, Mage=44, Mcpd =6.6). We collected demographics, MDD and SUD diagnoses, smoking history, and health related QOL (SF-36). The SF-36 measures poor general health (Gen), limitations in functioning due to physical health (PhysL), poor mental health (MH), lack of vitality (Vit), limits in social activities (Social), total physical (PCS) and non-physical (MCS) functioning. We examined the main effects of SUD and MDD on outcomes, and MDD was examined as a moderator. RESULTS: The relationship of MDD and SUD diagnoses with MDD= 36.1%, Alcohol (AD)=53%, Marijuana=47%, Cocaine (CD)=85%, and Opioid=86%. Controlling for smoking variables, AD predicted Gen (R² = 0.092, F(1,68)=22.66, p<.01) and Social (R² = 10, F(2,61)=43.09, p<.02). AD moderated the effect of AD on MH (R² = 27, F(3,58)=7.21, p=.003) and on Vit (R² = 27, F(3,58)=7.00, p=.0004). CD had a significant effect on MH (R² = 0.859, F(1,43)=4.21, p=.04). However, CD had no significant effect on Gen, (R² = .009, F(2,42)=2.17, p>.05) or Social (R² = .354, F(3,39)=7.13, p=.0006). CONCLUSION: AD and CD affect various domains of health related QOL, with MDD moderating some effects such that the presence of MDD leads to poor outcomes. Findings highlight the role of psychological comorbidities on poor health related QOL among a sample of substance using daily smokers and suggest interventions targeting psychopathology in addition to smoking may be useful to improving health outcomes.

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POS1-2
NEURAL AND BEHAVIORAL CORRELATES OF INHIBITORY CONTROL AND CIGARETTE SMOKING

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INTRODUCTION: Addiction is associated with inhibitory control deficits; however the bio-behavioral mechanisms underlying inhibitory control and cigarette smoking behavior remain poorly characterized. The present study examined relations between inhibitory control and smoking behavior, a greater understanding of which may provide valuable predictors for lapse/relapse vulnerability among smokers attempting to quit. METHODS: Healthy non-smokers (n=28) and sated smokers (n=28) performed a Go-NoGo task during functional MRI. Task-related BOLD response was examined within an inhibitory-control network (bilateral inferior frontal gyrus [IFG], precentral gyrus, insula, and pre-supplementary motor area [SMA]). Smokers then completed a smoking resistance task in which a monetary incentive was provided to refrain from smoking and smoking topography was subsequently measured. For comparison, the nonsmoker group performed a time-control version of the task. RESULTS: Groups did not significantly differ in performance on the Go-NoGo task or the smoking resistance task (p>0.25). However, among smokers, inhibitory control (i.e. NoGo accuracy) was associated with longer latency to initiate smoking (Beta=3.91, t=2.026, p<.05) and a fewer number of puffs (Beta=0.347, t=-1.799, p=0.09). With regard to inhibitory control-BOLD response, as compared to nonsmokers, smokers exhibited less activation in multiple nodes of the inhibitory control network; including bilateral posterior insula, left IFG, right precentral gyrus, and right SMA. CONCLUSIONS: Inhibitory control during the Go-NoGo task predicts capacity to resist smoking and degree of nicotine self-administration, suggesting that this measure may reflect vulnerability for lapse and/or relapse among smokers during a quit attempt. Further, these findings may provide neuroanatomical biomarkers to target treatment for inhibitory control deficits and smoking cessation (e.g., rTMS, cognitive training).

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POS1-3
MARIJUANA AND TOBACCO CO-USE VIA BLUNTS AMONG AFRICAN AMERICANS

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Despite the high prevalence of blunt (i.e., hollowed out cigars that are filled with marijuana) use among American marijuana smokers, few studies examine if, and how, blunt users differ from traditional joint users. The current study compared the prevalence and patterns of use for those who smoked blunts in the past month (i.e., blunt users) versus those who used marijuana through other methods (i.e., other marijuana users). The sample included 935 African American past month marijuana smokers participating in the 2013 National Survey on Drug Use and Health (NSDUH). Among past month marijuana smokers, 73.2% were blunt users and 26.8% other marijuana users. Overall, blunt users initiated marijuana use at an earlier age (15.9 vs. 17.3 years, p < 0.01) and reported more days of marijuana use in the past month (16 vs 8 days, p < 0.01), as compared to other marijuana users. There were also differences by gender. Among females, blunt users reported a higher odds of past-year marijuana abuse or dependence (23.8%) than other marijuana users (11.2%), (AOR = 1.23, 95% CI = 1.12 – 3.17, p < 0.01). However, blunt using males reported similar odds of past year marijuana abuse or dependence (approximately 25%) as other marijuana using males. These findings highlight the need for targeted interventions for blunt users as a subgroups of marijuana users, especially among African American females who may be at increased risk of developing a marijuana use disorder as a result of blunt smoking.

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POS1-4
DIFFERENCES IN THE RELATIONSHIP OF MARIJUANA AND TOBACCO BY FREQUENCY OF USE: A QUALITATIVE STUDY

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Co-use of marijuana and tobacco is increasing among adults in the U.S., but little research has been conducted to examine why co-use occurs. In light of changing marijuana policies, understanding the relationship between marijuana and tobacco is critical. Accordingly, this study aimed to assess how adult co-users of marijuana and tobacco qualitatively conceptualize and describe their use, and whether variation exists by frequency of use. Forty-eight past-month marijuana and tobacco users aged 18-34 years completed semi-structured, one-on-one, qualitative interviews in Washington State (U.S) in 2014. Interviews were digitally recorded, transcribed verbatim, and coded and analyzed overall and across frequency of use strata (high tobacco/high marijuana, high tobacco/low marijuana, low tobacco/ high marijuana, and low tobacco/low marijuana), where high tobacco use was daily use, and high marijuana use was use on ≥20 of the past 30 days. Participants reported primarily combusted use of both marijuana and tobacco. They described the relationship between tobacco and marijuana as: sequential use (e.g., using within short succession), co-administration (e.g., using at the same time), or substitution (e.g., using in different times/places), and described different reasons for these specific relationships (e.g., sequential use was due to habit/addiction, to enhance the high, or to counteract the effects of one substance; co-administration

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Individuals who co-abuse alcohol and nicotine have higher alcohol consumption alone. Priorities for future research and implications for the development of more effective prevention and treatment strategies will be discussed.

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**POS1-5**

**FURTHER EVIDENCE OF ELEVATED BEHAVIORAL ECONOMIC DEMAND FOR ALCOHOL IN HEAVY DRINKING SMOKERS**

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Individuals who co-abuse alcohol and nicotine have higher alcohol consumption and worse clinical outcomes than individuals who use either drug alone. In addition, prior research in behavioral economics has found that college student heavy drinkers who also smoke cigarettes report elevated relative value of alcohol (e.g., demand) on hypothetical alcohol purchase tasks compared to non-smoking drinkers. The goal of the present study was to further examine the relationship between concurrent alcohol use and smoking and indices of alcohol demand in a community sample of heavy drinkers. This study builds on prior work in a number of ways, most notably by recruiting a community sample with greater smoking and nicotine dependence severity than previous studies as well as controlling for several additional confounding factors (e.g., alcohol use, income, gender, depression symptoms, delay discounting). Participants were 111 non-treatment seeking heavy drinkers who were drawn from a larger study on alcohol pharmacotherapy.

Of the total sample, 44% (n = 49) were regular smokers as defined by smoking 5+ cigarettes per day (mean cigarettes/day = 12.9; mean FTND score = 4.39). Alcohol demand was measured using an alcohol purchase task assessing hypothetical alcohol consumption at escalating prices, ranging from Free-$15/drink. After controlling for overall drinking level, alcohol problems, gender, income, depression symptoms, and delay discounting, analyses of covariance revealed that heavy drinking smokers reported elevated alcohol demand compared to non-smokers. Specifically, smokers reported significantly greater maximum alcohol expenditures (Omax) and higher breakpoint (first price suppressing consumption to zero) (ps < .05).

These results are generally consistent with previous findings in college students and provide further confirmation that concurrent smoking and heavy drinking is associated with elevated relative value of alcohol compared to heavy drinking alone. Priorities for future research and implications for the development of more effective prevention and treatment strategies will be discussed.

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**POS1-7**

**QUIT INTENTIONS, ATTEMPTS, AND BEHAVIOR OF ADOLESCENT CIGARETTE SMOKERS: RESULTS FROM A NATIONAL TRIAL**

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BACKGROUND: As most smokers start before age 18, understanding youth quit intentions and behavior is critical for tobacco cessation interventions. OBJEC-

TIVE: Describe quit intentions and behaviors of adolescent smokers seen in pediatric primary care visits. METHODS: 142 practices in the AAP Pediatric Research in Office Settings network enrolled adolescents in a national trial of a smoking cessation intervention; 10,967 youth age 14-25 completed surveys prior to clinical visits. Of 936 (8.5%) current smokers, 602 (64%) completed follow-up surveys 4-6 weeks after visits. RESULTS: The smokers were 60% female, 81% white and 12% Hispanic. At 4-6 weeks, 69% were still smoking, but only 39% self-identified as smokers. 32% reported they had quit, citing health improvement (21%), “felt like it,” (11%), family (7%), and cost (5%) as primary motivations. Half reported ≥ 1 quit attempt in the past year. During their most recent attempt, 33% quit for < 1 week and 57% for < 1 month. Most (77%) wanted to stop smoking completely. Most (76%) had tried to quit cold turkey. Others reported using e-cigarettes (9%), gum/candy (5%) or NRT (4%). Among the 65% of quitters who started smoking again, reasons cited included stress (40%), others smoking (14%) and cravings (8%). Only 1% had ever called a quitline; 15% had sought advice online. Older youth were more likely to cite “felt like it” (17% v 7%) and cost (8% v 3%) as reasons for quitting (both p<0.04) and younger youth were more likely to cite family reasons (10% v 3%, p=0.05). Females were more likely than males to have tried to quit in the last year (53% v 43%, p=0.02) and to cite stress as their main reason for relapse (48% v 33%, p=0.028). Youth who identified as smokers were more likely to have a quit attempt in the last year (64% v 42%, p<0.001), to have relapsed after quitting (93% v 35%, p<0.001), and to have used e-cigarettes in a quit attempt (13% v 4%, p=0.01). CONCLUSION: Young smokers want to quit and try to do so, usually without assistance. Most teen quit attempts are unsuccessful. Health providers should understand adolescents’ motivations for quitting and provide appropriate support to encourage successful quit attempts.

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THE EFFECTS OF CIGARETTE REDUCTION IN SMOKERS AND E-CIGARETTE USERS WHO ALSO SMOKE CIGARETTES (DUAL USERS)

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BACKGROUND: We evaluated the extent to which e-cigarettes mimic cigarette effects on dependence mechanisms and whether e-cigarettes are used to displace smoking in dual users. METHODS: Two groups of smokers were recruited for the study: Smoke Only cigarette smokers (SOs: n=74; 58.1% female, 79.7% White, and mean age=43.4 years), and Dual Users consisting of e-cigarette (E-Cig) users who also smoke cigarettes (DUs: n=74; 40.5% female, 90.5% White, and mean age=33.0 years). Participants completed 7 study visits over a 26-day period on days 1, 8, 11, 15, 22, 24, and 26. Participants used a smartphone app daily to log smoking, vaping, and other smoking related assessments (e.g., withdrawal symptoms, environmental factors). Study assessments (questionnaires; exhaled carbon monoxide [CO] and urine samples for nicotine and cotinine assays) were collected at each study visit. During a first ad lib smoking period (Days 1-8), participants smoked and vaped ad lib. On Day 8, participants were instructed to reduce their self-reported 75% of baseline for the next 7 days (the 2nd ad lib smoking period). On Day 22, participants were instructed to stop smoking cigarettes completely on Days 23-25 (the cessation interval); DUs again could vape ad lib. Reduction and cessation adherence was assessed by expired CO level. RESULTS: Adherence to the reduction criterion did not differ by group, but cessation adherence was greater in the DU population. Among the 93% of SOs who met the reduction criterion, CO levels decreased from baseline to Day 15 by 1.8 ± 1.8 mg/L in SOs and 4.2 ± 1.9 mg/L in DUs (p < 0.001). Among the 77% of DUs who met the reduction criterion, CO levels decreased from baseline to Day 15 by 3.4 ± 1.7 mg/L in DUs (p < 0.001). CONCLUSIONS: Dual Users were more adherent to smoking reductions than SOs. Our results have important implications for future smoking reduction trials and for harm reduction strategies for dual users. Funding: This work was funded by the National Cancer Institute (R01 CA140576). The study was done by the American Academy of Pediatrics (AAP) Pediatric Research in Office Settings (PROS) practice-based research network, which receives funding from the Health Resources and Services Administration-Maternal and Child Health Bureau (UA6MC15585), and the AAP Julius B. Richmond Center of Excellence, which receives funding from the Flight Attendants Medical Research Institute (FAMRI).

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EVALUATION OF PHYSICIAN USE OF THE 5 A’S TO ADDRESS PREGNANCY SMOKING: WHAT DO PATIENTS PERCEIVE AND DESIRE?

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OBJECTIVE: Prenatal providers are expected to assess and intervene with pregnant smokers, however, in regions with high rates of pregnancy smoking, many providers do not effectively engage in these efforts. The goal was to evaluate pregnant smokers’ assessment of their health care providers’ efforts to address their smoking. METHODS: 408 pregnant smokers from rural South-Central Appalachia completed a third-trimester open-ended questionnaire about how smoking was addressed during their prenatal care. Responses were analyzed by multiple coders.

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POS1-12 DIFFERENTIAL PREDICTORS OF RELAPSE AS A FUNCTION OF TIME QUIT: DATA FROM THE ITC 4-COUNTRY SURVEY

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INTRODUCTION: This paper aims to explore the extent to which predictors of relapse vary as a function of how long after quitting the relapse occurs. METHOD: We use waves 1-9 of the ITC-4 country survey. We assess a range of predictor variables on relapse at various intervals after quitting: including sociodemographics, indices of dependence, quitting history, wanting to quit, self-efficacy, and reasons for smoking. Intervals were: < 1 week, 1-2 weeks, 2-4 weeks, 1-3 months, 3-6, 6-12 months, and >1 year. N ranged from around 9500 for relapse in the first week, to around 1200 for more than 1 year, because we exclude those who relapsed in an earlier period. We report Hazard Ratios (HR) for relapse within each period. RESULTS: The HSI was most predictive in the first week (HR=1.22) and declined to 1.04 at 1-3 months and was not significant thereafter. Previous quit attempts was generally predictive of relapse, as was enjoyment of smoking and reporting it to be an important part of life (but only in first month). Wanting to quit was consistently associated with greater relapse except in the first week, and proximity of quit plans showed a similar pattern but lost predictive power at longer intervals. The more friends you have who smoke, the more likely relapse was across all periods (HRs from 1.09 to 1.15 per extra friend). Self-efficacy was the only consistent protective factor, only up to 1 month, measured before quitting; but consistently when measured during the attempt. There were few demographic effects except for age: those over 30 survive longer, but only after the first week. CONCLUSIONS: This extension of previous work confirms that predictors of quitting vary with time quit. There appear to be different influences in the first week, for the rest of the first month or in some cases a little longer, and perhaps relapse beyond 1 year or being different again. The findings suggest models of addiction need to be modified to accept that the measures of habit strength are measuring aspects of early challenge, but not of long term success. As smoking is a chronic relapsing condition, this is a major failing.

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POS1-13 MOTIVATING AND PREPARING SMOKERS WHO HAVE SEVERE AND PERSISTENT MENTAL ILLNESS TO QUIT SMOKING

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BACKGROUND: People with a severe and persistent mental illness are far more likely to smoke than others. Importantly, a large portion of them would like to quit. Despite this desire, they are less likely to make quit attempts and succeed. Interventions that increase their engagement in treatment, motivation to quit, quit attempts, and eventual successful cessation are needed. METHOD: 222 smokers with significant mental illness who were not interested in quitting were randomly assigned to either an intervention group or an attention control group. The intervention consisted of a motivational element, elements designed to prepare the smoker for the quit attempt, and, pre-quit use of the nicotine patch over four weekly sessions. RESULTS: Compared to control participants, smokers receiving the intervention were more likely to be abstinence at the three month follow-up (biochemically verified, intent to treat, 8.5% vs. 1.0%, respectively, p<0.01). Intervention participants were also more likely to accept four more quitting preparation sessions (intent to treat, 50.6% vs 20.2%, respectively p<0.001) but were not statistically more likely to call a telephone tobacco quit line (intent to treat, 9.3% vs. 5.8%, respectively p=0.45). Conclusion: Brief interventions can effectively increase motivation to quit and subsequent abstinence among smokers with significant mental illness.

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POS1-14 DISSEMINATION OF AN EVIDENCE-BASED TOBACCO TREATMENT CURRICULUM TO PSYCHIATRY RESIDENCY PROGRAMS

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OBJECTIVE: People with psychiatric/addictive disorders have the highest rates of tobacco use and related morbidity/mortality; psychiatrists are the least likely specialty to treat tobacco. Psychiatry residency is an opportunity setting to train to improve practice. This study evaluates dissemination of Psychiatry Rx for Change, a curriculum for psychiatry residencies, focused on identifying/treating tobacco dependence in those with mental illness. METHODS: The 4-hour curriculum (evidence-based, patient-oriented cessation treatments relevant for all tobacco users, including those not ready to quit) previously tested in a pilot study, was disseminated within 8 training programs across 4 states. Surveys on knowledge, attitudes and practice habits were administered before, after and 6 months post-training. Website usage was also assessed. RESULTS: 119 valid baseline and 72 post surveys were collected (44% PGY3, 56% female, 53% Caucasian and 38% never tried tobacco). The curriculum was associated with significant improvements in knowledge/confidence for treating tobacco, regardless of program site, resident smoking status, interest level, or PGY level. Attitudes about barriers (with program and training year effects) significantly improved. Over 90% of residents recommended the training and stated it would increase the number of patients they treat and improve the quality of tobacco counseling; 77% rated the training to be as good as or better than other didactics in their program. The online Psychiatry Rx for Change curriculum has been accessed by >34000 registrants with >13000 file downloads (most accessed are the medication guide followed by epidemiology slides, counseling guide, treatment slides, and medication interaction guide). CONCLUSION: Dissemination of the evidence-based Psychiatry Rx for Change residency curriculum positively impacted knowledge/confidence across training sites and PGY level, regardless of smoking status and interest in the curriculum. This model standalone tobacco curriculum can be disseminated widely in psychiatry residency training programs, thereby effectively reaching the most disproportionately affected and ignored population of smokers.
POS1-15
RACIAL AND ETHNIC DISPARITIES IN DENTAL CARE PROVIDERS' DELIVERY OF TOBACCO USE TREATMENT

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BACKGROUND: Dentists have a central role in treating tobacco use. Unfortunately, implementation of the tobacco use treatment (TUT) guidelines in dental care settings remains inadequate, perpetuating provider practice patterns and treatment decisions already contributing to racial and ethnic disparities in care (Shavers et al., 2012). METHODS: Data were collected as part of a larger cluster randomized clinical trial implementing TUT guidelines in dental clinics. A slightly modified, 17-item patient exit interview (PEI; Pbert, 1999) was administered to 1,015 smokers after their dental visits. PEIs measured dentists’ TUT delivery during the appointment. Race, ethnicity and English language proficiency were also assessed. Logistic regression models were used to calculate odds ratios and 95% confidence intervals (CI) for dependent and independent variables.

RESULTS: Patients identifying as Black were more likely to report being asked about their tobacco use (OR=1.63, 95% CI: 1.16-2.28) and being advised to quit (OR=2.86, 95% CI: 1.43-5.75) than White patients. Patients identifying as Hispanic were least likely to report being asked about tobacco use by their dental care provider as compared to non-Hispanic patients (OR=0.74, 95% CI: 0.58-0.95). Furthermore, though not significant, Hispanic patients were less likely to be advised to quit (OR=0.82, 95% CI: 0.50-1.34). Patients’ ability to speak English “well” (versus “not well”) was not significantly associated with higher likelihood of being asked about tobacco use (OR=1.02, 95% CI: 0.64-1.62) or advised to quit (OR=0.83, 95% CI: 0.36-1.91). CONCLUSIONS: Our results demonstrate that disparities exist in dentists’ provision of TUT for Hispanic patients. Low English proficiency did not explain this finding, raising questions about other causes, such as beliefs about low tobacco use prevalence among Hispanic patients and implicit provider bias. Higher rates of TUT delivery for Black smokers are encouraging and stand in stark contrast to disparities seen in prior work. Identifying factors that influence provider TUT practice patterns may inform interventions addressing disparities in patient health outcomes.

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POS1-16
CHRONIC PAIN, ECONOMIC STRAIN, AND ATTEMPTS TO QUIT SMOKING AMONG SMOKERS WITH MOBILITY IMPAIRMENTS

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People with mobility impairments (MIs) have nearly twice the smoking prevalence as those without MIs, and a higher incidence of chronic pain. Our aim was to test, among smokers with MIs, the association between chronic pain and 1) smoking behavior. Participants (n=274, 54% female, 47.8% white, mean=15.1 cigarettes/day) were enrolled in a randomized trial on motivating smoking cessation among smokers with MIs. Eligible participants were current smokers who reported long-term use of assistive devices (e.g., cane, wheelchair) and difficulty walking short distances without devices. Participants did not have to want to quit smoking to be enrolled. Data reported here were collected at baseline. We assessed presence of chronic pain (current pain that occurs constantly or flares up frequently; not fleeting or minor aches/pains), use of pain medication in the last two weeks, quality of life (SF-12), smoking to cope with pain (Pain and Smoking Inventory, PSI), self-efficacy for smoking cessation (Confidence Questionnaire), readiness to quit smoking, and depressed mood (Center for Epidemiologic Depression Scale). 86.5% of the sample (n=237) reported chronic pain and 67.8% (n=185) reported pain medication use. Participants with chronic pain were more likely to be Caucasian/white (p=.007) and reported greater economic strain (p=.05) than those without chronic pain. Chronic pain sufferers also had lower physical (p=.001) and mental (p=.017) quality of life and higher PSI scores than those without chronic pain (p=.001). Those with chronic pain had a greater number of attempts to quit smoking (mean=10.06) than those without chronic pain (mean=5.4; p=.015). Participants on pain medication had lower self-efficacy for smoking cessation (p=.03) and greater economic strain (p=.016) compared to those not on pain medication. There were no significant differences in the number of cigarettes smoked per day, readiness to quit, or depressed mood between those with and without chronic pain. Prospective studies could examine if addressing chronic pain impacts smoking behavior.

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POS1-17
DEVELOPMENT AND PSYCHOMETRIC PROPERTIES OF THE SMOKING RESTRAINT QUESTIONNAIRE

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OBJECTIVE: Restraint is a component of self-control that focuses on the deliberate reduction of an undesired behaviour and is theorised to play a role in smoking reduction and cessation. However, there exists no instrument to assess smoking restraint. This research aimed to develop the Smoking Restraint Questionnaire (SRQ) to meet this need. METHODS: Participants were 406 smokers (48% female; 52.2% non-diary) with a mean age of 38.83 years (SD = 12.05). They completed a baseline questionnaire designed to assess smoking restraint. They also completed 21-days of ecological momentary assessment (EMA), during which they recorded each cigarette smoked and answered questions related to planned restraint every morning, and restraint attempts every evening. RESULTS. The 4-item questionnaire of smoking restraint was found to fit a single factor (RMSEA = .038, CFI = .99, TLI = .99), and the resulting composite was reliable (composite reliability = 0.74). The questionnaire contains items that assess the setting of weekly restraint goals and attempts at not lighting up when tempted to smoke. Participant SRQ scores positively correlated with EMA data on plans to restrain (r <.001) and frequency of restraint attempts (r <.001). These correlations suggest that the SRQ has good predictive validity in relation to the intention and behaviours of smoking reduction. CONCLUSIONS. The SRQ is promising as a measure of smoking restraint, and may enable further research and insights into smoking reduction and cessation.

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POS1-18
PERCEIVED ABILITY TO HANDLE DAY-TO-DAY AND UNEXPECTED STRESS ARE POSITIVELY ASSOCIATED WITH SMOKING ABSTINENCE AT 6-MONTHS

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Perceived self-efficacy and control over one’s life are central to many theories of health behavior change. While research has demonstrated the effect of perceived self-efficacy in one’s ability to quit smoking, there is only limited evidence of perceived self-efficacy in other parts of one’s life in relation to smoking cessation. The aim of this study was to determine whether higher self-reported control over life stressors was associated with better quit outcomes. The study sample consisted of 9,008 subjects who participated in an NRT-assisted smoking cessation treatment program run through participating primary care and addiction settings in Ontario, Canada. Participants enrolled between January 2014 and March 2015, and responded to the 6 month follow up survey. Perceived efficacy and control over life stressors was assessed at enrollment along with other demographic characteristics. Bivariate analyses were conducted to determine whether self-ratings of abilities to handle problems and day-to-day demands at baseline were associated...
with abstinence at 6-months. Participants with higher ratings of ability to handle unexpected problems were similar to participants with higher self-ratings of ability to handle day-to-day demands in that they were more likely to be male, have no history of mental illness, more years of education, and greater household income (all p<0.001). Ratings on the two measures were correlated (r=0.639, p<0.001). Higher ratings of ability to handle unexpected problems were significantly associated with higher quit rates at 6 months (p<0.001), as were higher ratings of ability to handle day-to-day demands (p<0.001). Perceived self-efficacy in areas external to smoking cessation are likely important for smoking cessation success. Furthermore, ratings of perceived self-efficacy may provide a summary indication of the individuals’ overall life situation, as evidenced by the strong associations we found between self-efficacy ratings and participant demographics. Additional analyses will examine the relationship between perceived self-efficacy and other measurements of confidence in cessation efforts.

**POS1-19 METHODS FOR ASSESSING DISCRIMINATION OF NICOTINE IN HUMANS VIA CIGARETTE SMOKING**

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Nicotine’s interoceptive stimulus effects, which may help explain its reinforcing efficacy, are most commonly assessed in humans via self-report of subjective effects. Behavioral drug discrimination of stimulus effects, typically used in non-human models, can allow direct comparison of discrimination behavior with subjective effects. Human studies of nicotine discrimination have been limited by difficulties controlling dosing via tobacco inhalation (e.g. variable topography). However, recent Spectrum research cigarettes (NIDA) that differ in nicotine contents (but have 9 mg “tar”) allow study of nicotine discrimination in humans via smoking. Described here are methods used to develop and evaluate procedures for assessing behavioral discrimination of cigarettes high in nicotine content (16 mg/g; 0.76 mg yield) versus “placebo” (0.3 mg/g; 0.03 mg yield). We initially adapted procedures from the only prior systematic research of nicotine discrimination in humans, that using nasal spray (e.g. Perkins et al., Psychopharmacol. 1999; 142: 158-164), to study 29 (19 M, 10 F) adult dependent smokers (means of 16.8 cigs/day, 5.0 FTND) who abstained overnight. The session at first involved two “training” trials, where subjects were given and inhaled the cigarette by letter code (e.g. “A” or “B”), followed by 6 testing trials (uninformed) on acquisition of discrimination. The two types of cigarettes were presented in random order, once per 15 min, and smoke intake was standardized at 4 puffs via Cress. To standardize subject motivation, each correct cigarette identification was reinforced by $1, with successful discrimination defined by at least 80% correct (i.e. 5 out of 6 trials). All who “failed” then repeated this testing on a different day, to confirm inability to discriminate. Unexpectedly, only 10 of the first 20 subjects (50%) were able to discriminate these cigarettes, in contrast to our prior studies with spray (82% success). Thus, we added a second training trial for each cigarette pair per session (total of 4 “training trials”) and found more, 8 of the next 9 subjects (89%), were successful discrimination defined by at least 80% correct (i.e. 5 out of 6 trials). Thus, we added a second training trial for each cigarette pair per session (total of 4 “training trials”) and found more. 8 of the next 9 subjects (89%), were able to discriminate them (chi-square=3.99, p<.05). Our results should inform future research evaluating discrimination of nicotine via cigarettes.

**POS1-20 LATENT TRANSITION ANALYSIS OF WEEKLY MEDIAN CIGARETTE COUNTS IN THE FIRST MONTH OF QUITTING**

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The course of smoking during cessation attempts does not run true for most smokers. Continuous abstinence is rare and recent models of daily smoking status (i.e., any vs. no smoking) have identified three latent classes of smokers characterized by unstable smoking status across the first month of quit attempts. Less is known about common patterns of smoking heaviness (rather than binary smoking status) over the first weeks of quitting. Descriptive models of the nature and stability of smoking heaviness during cessation have the potential to illuminate the common courses of quitting. The current study was a secondary analysis of data from a smoking cessation pharmacotherapy trial. The aim was to identify latent classes of smoking heaviness in each of the first four weeks of a quit attempt, and to model latent transitions among classes from week to week. Data from 1414 adult daily smokers enrolled in a randomized clinical trial of five pharmacotherapies and a placebo control were analyzed using latent transition analysis. Latent classes were estimated for each of the first four weeks of a quit attempt based on the median number of cigarettes smoked each week. Analyses indicated that a four-class solution was optimal and that the latent class solution was stable across weeks. The four classes were 1) abstainers who did not smoke at all in a given week, the most prevalent class in this sample; 2) quit attempters who were abstinent most days in a week but lapsed infrequently; 3) light smokers who consumed roughly 3-5 cigarettes per week; and 4) heavier smokers. Although there was stability in classes over time, most notably among the abstainer class, there were significant transitions, particularly among those smoking in the first week. The quit attempter class was particularly unstable in the first two weeks, and the light smoker class was only moderately stable across weeks. There was also evidence of continued efforts to quit among the heavier smoking class in the first weeks of the quit attempt, but smokers seemed to reach stable smoking patterns by the third week post-quit. Latent transition analysis may be a useful tool in understanding change processes.

**POS1-21 ARE TOP-RATED QUIT SMOKING MOBILE APPS USABLE BY PEOPLE WITH SCHIZOPHRENIA?**

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Smoking cessation treatment is effective for smokers with schizophrenia, but access is poor. Smartphone applications (apps) are one way to increase access to cessation treatment; however, people with schizophrenia have cognitive impairments and available apps may not be usable or comprehensible by this group. We aimed to review cessation apps for quality (study A) and usability, usefulness, and likability in smokers with schizophrenia (study B). First, in study A, we searched app stores and randomly selected 100 of the 535 apps. Two independent reviewers coded the app for type and rated each app using the Adherence Index to U.S. Clinical Practice Guideline for Treating Tobacco Use and Dependence Index and had excellent inter-rater reliability (kappa=.914, SE =.033, p < .0005). We analyzed quantitative results using descriptive statistics and t-tests. In terms of app type, nearly 18% were categorized as calculator, 12% Hypnosis, 10% Mixed, 5% Rationing, 1% Calendar, and 54% were categorized as other because they provided a mixture, which included new functions. Of the “Other” category, we created subtypes; most apps contained educational content (n=16/40, 41%). The educational applications did the best on the overall guideline ratings (t=4.04, df=24, P<.0001) across all collapsed subcategories. 74 apps were usable as smoking cessation apps, but 66% of them scored below a 10 out of 60 on adherence to treatment guidelines (M=11.47, SD=11.8). In Study B, the top 10 apps were assessed for usability among 21 smokers with schizophrenia within a structured laboratory assessment protocol. Use was observed and video-taped. Participants’ perceptions of each app were also assessed with a structured cognitive interview. Recordings were close coded and analyzed. Of the top ranking apps, most participants reported liking them and thought they would be useful to quit smoking. However, apps that were easiest to navigate contained content that was difficult to comprehend and contained the least amount of interactive support. This study suggests that mobile apps for cessation need additional tailoring of design and content to help smokers with schizophrenia quit.

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POS1-22
36 MONTH FOLLOW-UP OF A SMOKING AND HEALTH LIFESTYLES INTERVENTION AMONG PEOPLE WITH A PSYCHOTIC DISORDER

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RESEARCH AIMS: The Healthy Lifestyles Project is the first randomized controlled trial to evaluate a cognitive-behavioural intervention addressing smoking and other health behaviours among people with psychotic disorders. Methodology: Participants were randomly assigned to receive a single face-to-face session consisting of feedback and motivational interviewing and nicotine replacement therapy, plus either: (i) a face-to-face intervention targeting multiple health risk behaviours; or (ii) a predominantly telephone delivered intervention involving monitoring, follow-up surveys were completed at 15 weeks (n=165, 70.2%), 12 months (n=139, 59%), 18 months (n=132, 56.2%), 24 months (n=133, 56.6%), 30 months (n=129, 54.9%) and 36 months (n=134, 57%). ITT analysis was used for primary outcomes and mixed models were used for both primary and secondary modelling, so all participants were included in analyses. RESULTS: At baseline, participants (N=235, Age, M=41.6 years, 59% male) were smoking on average 28.6 cigarettes per day (CPD). There were no significant overall differences between the telephone and face-to-face conditions in the primary smoking outcome of biochemically confirmed point-prevalence abstinence rates (8% and 11%, respectively) at 36 months. There were no significant differences between groups in most measures of exercise, diet and body measures (total minutes walking per week, total minutes sitting per week, BMI, waist circumference, weight, waist-to-hip ratio). CONCLUSION: Face-to-face and telephone-delivered interventions are effective and feasible for people with severe mental disorders for smoking. Interventions for multiple health behaviour change appear worthy of further research among people with psychotic disorders.

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POS1-23
EFFECT OF CYP2A6, UGT2B10, UGT2B17, FM03, AND OCT2 GENETIC VARIATION ON NICOTINE AND COTinine DISPOSITION KINETICS AMONG AFRICAN AMERICAN SMOKERS

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OBJECTIVE: African American (AA) smokers are more highly dependent compared to Whites, despite smoking fewer cigarettes per day. They possess substantially more gene variants in the major nicotine metabolizing enzyme, CYP2A6, leading to a slower rate of nicotine metabolism. Here, we examined whether alternative nicotine metabolism pathways, such as glucuronidation or N-oxidation, may play a greater role in nicotine disposition kinetics in AA smokers. METHODS: Sixty AA smokers received an infusion of labeled nicotine and cotinine (COT). Biological samples were collected and pharmacokinetic parameters estimated. Subjects were genotyped for variants within CYP2A6, UGT2B10, UGT2B17, FM03, and OCT2. The association between genetic variation and nicotine/COT kinetics was investigated using regression models. RESULTS: Variation in UGT2B10 significantly altered the ratios of nicotine glucuronide/free nicotine (p<0.001) and COT glucuronide/free COT (p<0.001). UGT2B17 variation significantly altered 3'-hydroxycotinine (3HC) glucuronide/free 3HC ratio (p=0.017). However, the UGT genes did not affect nicotine pharmacokinetics, even among slow CYP2A6 metabolizers. Those with the OCT2 variant (rs316019) had a 2.2-fold increase in nicotine Cmax compared to wild type (mean=20.3 vs. 44.0 ng/ml, respectively; p=0.005), accounting for 19.8% of variation in Cmax. Variation in the FM03 gene was not associated with alterations in nicotine kinetics. Those homozygous for a UGT2B10 splice variant (rs116294140) excreted little to no COT glucuronide and had 1.6-fold higher COT AUC, and 60% lower COT non-renal clearance. Variation in UGT2B10, UGT2B17, and FM03 did not alter the urinary or plasma nicotine metabolite ratio (3HC/COT); suggesting individuals with low glucuronidation or N-oxidation are not potentially misclassified for this CYP2A6 phenotype. CONCLUSION: Alternate nicotine metabolizing genes do not appreciably alter nicotine pharmacokinetics and are therefore unlikely to have a meaningful impact on smoking behavior among AAs. A UGT2B10 splice variant that demonstrates significant alterations in COT kinetics may alter this commonly used biomarker of nicotine intake among AAs.

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POS1-24
DEVELOPING AN INTERVENTION TO IMPROVE NICOTINE PATCH ADHERENCE IN HIV-POSITIVE LATINO SMOKERS

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It is important for HIV-positive people to quit smoking. Although no single treatment works especially well with HIV-positive smokers over the long term, a key finding from research to date is that individuals had worse smoking cessation outcomes if they were non-adherent to nicotine patch treatment (NP). This suggests that clinical research with HIV-positive smokers must improve adherence to the NP within the context of treatment in order to improve smoking cessation outcomes. This presentation describes two phases of formative research that were undertaken to develop a smoking cessation treatment module that specifically improves adherence with the NP in HIV-positive smokers. The population of interest is HIV-positive Latino smokers (English- and Spanish-speaking) in Los Angeles. Phase I interviewed n=11 smokers (mean age=45.7 years; 82% male; mean cigarettes smoked/day=11.4) who had previous experience using the NP to gain detailed understanding of how, when, and why they used NP; their perceived barriers to using the NP; and their perspective on ways to improve adherence to the NP. Phase II provided n=35 smokers (mean age=47.1 years; 66% male; mean cigarettes smoked/day=13.0) with brief smoking cessation treatment and the NP and interviewed them in “real time” over a two month period about their use of the NP during a quit attempt (e.g., perceived barriers and facilitators to using NP). An analysis of the interview transcripts from these two phases clearly indicated that consistent use of NP was associated with maintaining high motivation for use (i.e., not necessarily motivation to quit, but motivation to continue patch use); linking NP use with established daily routines (e.g., with taking other medications, with brushing teeth); and maintaining realistic expectations for NP efficacy (e.g., that NP users may still experience some level of craving and/or withdrawal). This information was used to develop a brief treatment module (10 minutes) that focused on improving NP adherence. The feasibility and acceptability of this NP adherence module is currently being evaluated in further pilot work.

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POS1-25
ADVERSE CHILDHOOD EXPERIENCES AS A PREDICTOR OF ADULT NICOTINE DEPENDENCE

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INTRODUCTION: Research has shown that childhood adversity is associated with maladaptive coping strategies such as tobacco and substance abuse in adults. Little, however, is known about the sex differences of this phenomenon. This study seeks to explore the relationship between adverse childhood experiences (ACEs) and adult nicotine dependence and whether this relationship varies by sex. METHODS: Participants were 18-60 years of age, smoked at least 5 cigarettes per...
POS1-26

CESSATION OF ALCOHOL CONSUMPTION DECREASES RATE OF NICOTINE METABOLISM IN ALCOHOL DEPENDENT SMOKERS

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INTRODUCTION: Alcohol abuse is associated with a high rate of cigarette smoking, greater nicotine dependence, and poorer smoking cessation outcomes. The current study examined the hypothesis that chronic alcohol abuse may alter the rate of nicotine metabolism, which may contribute to these behaviors. Changes in nicotine metabolism were assessed in smokers during inpatient treatment for alcohol dependence. METHODS: Subjects were cigarette smokers entering a 7 week treatment program for alcohol dependence in Poland (N=165). Data were collected at three time points: baseline (week 1), after acute alcohol detoxification), week 4, and week 7. At each time point, tobacco use and dependence (FTND) were assessed and urine collected before the first cigarette of the day. Urine from 22 male subjects was analyzed for nicotine metabolites and used to determine nicotine metabolism rate (NMR, the ratio of 3HC/cotinine, a biomarker for rate of nicotine metabolism), and total nicotine equivalents (TNE, a biomarker for total nicotine exposure). Tobacco use variables and biomarker data were analyzed using RM-ANOVA across the three sessions. RESULTS: Urine NMR was significantly lower on week 4 and 7 compared to baseline (F(2,42)=18.83,p<0.001), indicating a decrease in rate of nicotine metabolism. On average NMR decreased 50.0% from baseline to week 7 (9.6 ±1.3 vs. 4.1 ±0.6), with a 25% reduction in excretion of nicotine-C-oxidation oxidation products. Despite a slight increase in self-reported cigarettes smoked in the past day (17.1 ±7.8 vs 18.8 ±6.8), urine TNE was not significantly different across the three sessions, indicating that there was no change in total nicotine exposure. CONCLUSIONS: The current study indicated that chronic alcohol abuse induces the metabolism of nicotine, and cessation of alcohol consumption results in a significant decrease in the rate of nicotine metabolism, without a change in nicotine intake. These results have important implications for understanding differences in tobacco use and dependence among individuals with high alcohol consumption, and may help to inform future smoking cessation interventions in this population.

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POS1-27

DOES MOUTHPIECE-BASED MEASUREMENT OF ELECTRONIC CIGARETTE USER TOPOGRAPHY INFLUENCE NICOTINE DELIVERY DURING AD LB USE?

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BACKGROUND: Electronic cigarettes (EICG) heat a nicotine-containing solution; the resulting aerosol is inhaled by the user. EICG use behavior (puff topography) can be recorded using mouthpiece-based computerized systems that do not appear to influence nicotine delivery in experienced EICG users during controlled puffing (Spindle et al., 2015). However, the extent to which mouthpiece-based systems influence nicotine delivery during ad lib puffing is unknown. METHODS: Plasma nicotine was measured in experienced EICG users (N=29) using their preferred EICG battery attached to a 1.5 Ohm dual-coil cartomizer with 1 ml of their preferred EICG liquid (≥ 12 mg/ml nicotine) during two conditions (with and without a mouthpiece-based topography device developed specifically for EICGs). In addition, all participants completed a 10 min ad lib bout and in the condition where the mouthpiece was present, puff topography was measured. RESULTS: A two-factor (condition, time) repeated-measures ANOVA was performed for plasma nicotine. A significant main effect of time [F(7,195)=36.5, p<0.001] was observed, with a large significant main effect of condition across time, relative to mean plasma nicotine concentration at baseline (4.0 ng/ml, SD=4.4) significantly increased were observed at 30 (25.7 ng/ml; SD=20.0), 60 (31.2 ng/ml; SD=20.8), and 90 minutes (35.0 ng/ml; SD=24.5). In the mouthpiece condition, mean puff duration was 5.3 sec (SD=2.1), mean puff volume was 146.5 ml (SD=119.6), and mean flow rate was: 27.5 ml/sec (SD=22.6). CONCLUSIONS: EICG use increased plasma nicotine concentration during ad lib puffing, and this effect did not differ when a topography mouthpiece was attached to the EICG. Interestingly, mean plasma nicotine concentrations observed during ab lib EICG use were similar to those observed during ad lib combustible cigarette use in previous studies (e.g., Foulds et al., 1992; M=27.0 mg/ml, SD=9.9); Yan and D’Ruan, 2013; M=29.2 (SD=10.8). Understanding EICG user puff topography under ad lib use conditions is an essential step in exploring EICG aerosol toxicant content.

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POS1-28

VALIDITY OF THE SELF-REPORT SMOKING STATUS IN OUTPATIENTS ASSISTED IN A SMOKING CESSATION UNIT AT BUENOS AIRES CITY: CROSS-SECTIONAL STUDY

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Treatment of tobacco dependence is the most cost-effective measure in health care. The success rate obtained in smoking cessation services is evaluated by measuring exhaled CO. Some treatment guidelines from other countries recommend that this evaluation can be obtained through self-report of patients due to have local data that suggest its validity. But, in Argentina there is a lack of local information. OBJECTIVE: To assess the validity of the self-reported smoking status in outpatients assisted in the Smoking Cessation Unit at the Hospital de Clinicas (University of Buenos Aires) from 2013 to 2014. METHOD: This is a cross-sectional study. The sample consisted of 164 outpatients who had received treatment in our Unit, who reported to be abstinent and then were chosen systematically. Demographic information, clinical history along with information on smoking were obtained. After classification, each participant was asked to keep a smoking status journal and a sample of exhaled CO at 7 (n=32), 30 (n=38), 60 (n=33), 90 (n=32) and 180 (n=29) days since post intervention. Patients with CO levels higher than 7 ppm were considered as smokers. We reported response percentages confirmed by CO and compared them in each period with Chi square. RESULTS: The sample included 61.6% of women with a mean age of 50.71 years (SD +/- 12.48), a mean of 14.38 years of education (SD+/-.3.5) and 47% were married. Related to the smoking behavior they had a mean of 32 years of smoking (SD+/-.12.57), a
mean of 27.18 cigarette consumption by day (SD +/-12.77), a mean of the score Fagerström test 4.98 (SD +/- 2.5) and 2.44 (SD +/- 2.5) previous quit attempts. Overall, participant's self-reported smoking status was confirmed by exhaled CO in 95.7% (n=157), without significant differences among each post intervention follow-up: 7 days: 93.8%, 30 days: 100%, 60 days: 97%, 90 days: 93.8% and 180 days: 93.1% (p=0.571). CONCLUSIONS: Findings suggest that the self-reported smoking status among our patients was highly consistent with exhaled carbon monoxide results, but, as the degree of bias depends upon the population considered more studies are necessary in order to generalize these results.

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POS1-29
SMOKING-RELATED COGNITIONS AND BEHAVIORS BY CANCER PATIENTS: DOES IT MATTER IF THEIR CANCER WAS “SMOKING-RELATED”?
Diana Díaz, Moffitt Cancer Center

Continued smoking after a cancer diagnosis can negatively impact cancer-treatment outcomes and quality of life. Many patients quit smoking after diagnosis, yet research suggests smoking relapse rates are high. To date, tobacco research with cancer patients has focused primarily on patients who are diagnosed with cancers most closely associated with smoking (i.e., thoracic, head and neck). Given the variety of cancer types represented in our ongoing relapse-prevention randomized controlled trial, we sought to explore whether there are unique challenges by cancer type that would necessitate future targeted interventions. We examined baseline differences in nicotine dependence and affective, cognitive, and physical characteristics among patients who have been diagnosed with a smoking-related vs. a non-smoking-related cancer. Participants (N = 414) were newly diagnosed patients who recently quit smoking. Smoking-related cancers were initially defined by cancer types most closely associated with smoking: thoracic and head and neck, (N = 153). These patients reported greater nicotine dependence, pain severity, and cessation self-efficacy (p<0.05) as compared to patients with other cancer diagnoses. Preliminary analyses at 2-month follow-up (N = 359) indicate that patients with smoking-related cancers (n=138) were less likely to have resumed smoking (13.8% vs. 25.3%, p<0.05). Comparable results using an expanded definition of smoking-related cancers (i.e., all cancers causally related to smoking) will also be presented. These results draw attention to the importance of including patients with non-smoking related cancers in future smoking cessation and relapse-prevention trials and identifies potential unique factors related to cancer type that may useful for targeted communication for cancer patients.

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POS1-30
THE EFFECTS OF ALCOHOL-CONTAINING E-CIGARETTES ON YOUNG ADULT SMOKERS
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BACKGROUND: The liquids (e-liquids) used in an electronic cigarette (EC) contain myriad chemicals that are presently without adequate human inhalation safety data. Furthermore, the absence of EC labeling requirements poses a formidable challenge to understanding how e-liquid constituents may promote nicotine addiction and/or have independent or synergistic biological effects when combined with nicotine. Ethyl alcohol is one such constituent, but has received little scientific interest in this context. METHODS: Sixteen young adult cigarette smokers and social drinkers participated in a randomized, double blind, crossover study comparing the acute effects of inhaled vapor produced from commercially available e-liquids containing nicotine (8 mg/ml), vanilla flavor and 23% (high) or <0.5% (trace) alcohol. Changes in subjective drug effects, motor performance and biochemical measures of alcohol and nicotine exposure were compared between alcohol conditions, especially by youth and other vulnerable populations, further studies are urgently needed to evaluate both the acute safety and long-term health risks of using EC’s that contain both nicotine and alcohol.

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POS1-31
ASSOCIATION BETWEEN ELECTRONIC CIGARETTE USE AND 12-MONTH TOBACCO ABSTINENCE AMONG ADULT APPALACHIAN SMOKERS ENROLLED IN A TOBACCO CESSATION TRIAL
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BACKGROUND: Despite a lack of evidence on the efficacy of e-cigarettes as a cessation aid, smokers are turning to e-cigarettes as an alternative to smoking. This study investigated e-cigarette use and 12-month tobacco abstinence among adult Appalachian smokers enrolled in a tobacco cessation trial. METHODS: Adult Appalachian current smokers were enrolled in a group randomized cessation trial that included counseling and free nicotine replacement therapy (NRT) over 10 weeks. From April 2012 to October 2014, baseline and follow-up information was obtained about the use of e-cigarettes. Of the 347 participants, 213 had complete data for the 3-, 6-, and 12-month follow-ups and were included in this analysis. Tobacco abstinence was biochemically confirmed. RESULTS: Almost one in five participants (18.3%) reported using e-cigarettes every day or some days post-intervention (3-, 6-, and/or 12-month follow-up). Most participants were 25-54 years old (60.6%), female (70.9%), white (93.4%), had more than a HS degree or GED (55.7%), and lived above the 100% poverty level (84.0%). There were no significant differences between e-cigarette users and non-users in sociodemographic characteristics. Significantly fewer e-cigarette users compared to non-users were tobacco abstinent at the 12-month follow-up (2.6% vs. 19.0%, p=0.008). CONCLUSION: This study indicated that those that use electronic cigarettes during a cessation attempt are less likely to be abstinent one-year later. Limitations of this study included that it was an observational study, e-cigarette data was only collected on 7-day point prevalence, and the small sample size. Further research is critical to determine the efficacy of e-cigarettes as a smoking cessation aid.

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POS1-32
SMOKING OUTCOMES FOLLOWING ALCOHOL BRIEF INTERVENTION IN YOUNG ADULT HEAVY DRINKER-SMOKERS: A PILOT STUDY
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Approximately 50% of young adult heavy drinkers in their 20s also smoke, often when drinking. Alcohol acutely increases smoking urge which contributes to downstream increases in tobacco-related risk. Traditional alcohol brief interventions (BIs) reduce risky drinking among young adults but do not target smoking specifically. Recently, our group showed...
that a novel alcohol BI featuring personalized feedback on alcohol response phenotype, including alcohol’s effect on smoking urge, reduced past-month drinking-smoking co-use and overall smoking frequency at 1- and 6-month follow-ups, relative to standard alcohol BI or an attention control intervention. The present study further examined the effects of alcohol BI on smoking quantity and frequency as a function of alcohol use among participants enrolled in that study. Non-alcohol-dependent, young adult (M ± SD age = 23.8 ± 2.1 years) heavy drinking smokers (0.7 ± 4.3 binge days/week, episodic/binge/month; 23.6 ± 6.3 smoking days/month) were assigned to one of three treatment conditions: standard alcohol BI (Bi-ARF; n = 11), standard alcohol BI with personalized alcohol response feedback (Bi-ARF; n = 10), or a health behavior attention control BI (AC; n = 11). Each group received two 20-30 min BI sessions, with alcohol response and smoking urge for the Bi-ARF recorded during a separate alcohol challenge session (0.8 g/kg). Past-month drinking and smoking behavior were assessed at 1- and 6-months post-intervention. Results revealed that the Bi-A and Bi-ARF, but not the AC, produced significant reductions in past-month smoking during non-drinking days, with the Bi-ARF group showing a larger reduction than the Bi-A group at 1-month follow-up (Group x Time p < .001). There were no group effects or group x time interactions for any smoking quantity outcome. Collectively, these results suggest that alcohol BI may reduce smoking during non-drinking occasions among young adult heavy-drinking smokers, with personalized alcohol and smoking response feedback enhancing this effect. Future research is warranted to enhance BIs to reduce alcohol/tobacco co-use in this population.

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### POS1-33
**PERSEVERANCE AND AMPLITUDE OF CIGARETTE DEMAND IN RELATION TO QUIT INTENTIONS AND ATTEMPTS**


**INTRODUCTION.** The cigarette purchase task (CPT) is increasingly used as a behavioral economic assessment of demand. Based on cigarettes purchased across a range of prices five metrics can be derived (Omax, Pmax, breakpoint, intensity, persistence) to provide a multidimensional assessment of the relative value of cigarettes. Among adolescent smokers, Indices comprised two latent variables. Per- sistence (price insensitivity) and Amplitude (volumetric consumption) ... We sought to replicate the two-factor latent structure within adult smokers, and examine their relationships with quitting behavior. **METHOD.** Web based survey conducted in 2014 among adult (18+) current (smoke every day or some days) cigarette smokers (N=1423). Participants completed a CPT, the FTND, and reported past-year quit attempts and future quit intentions. We also included previously published scales assessing perceived prevalence of smoking, social reactivity, smoker identity, and perceived risk of smoking related diseases. **RESULTS.** We replicated prior two-factor models – Persistence and Amplitude combined to explain 78% of variance. Age was inversely related to Persistence, with 18-34 year olds showing the highest levels (M = 0.160), 35-50 year olds intermediate (-0.053), and 50+ the lowest (-0.160) [p < .001]. FTND correlated strongly with both Persistence (r = .19) and Amplitude (r = .36). Persistence and Amplitude were highest among those with no home smoking rule. Persistence did not vary by number of past-year quit attempts, but was higher among those intending to quit very soon. Amplitude differed across quit attempts and intention (p’s < .001). In multivariate models Amplitude was significantly associated with lower intent to quit in the next 30 days [OR=0.71, p=0.001]. Persistence was marginally associated with having made at least one quit attempt in the past year [OR=1.14, p=0.08]. **CONCLUSIONS.** Consistent with adolescent data, Persistence and Amplitude factors characterized CPT data in adults. Factor scores discriminate known groups (e.g., intentions to quit) and were positively associated with nicotine dependencies. Future research should examine the predictive validity of these constructs.

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### POS1-34
**A PROSPECTIVE STUDY OF PRENATAL TOBACCO EXPOSURE, SECONDHAND SMOKE EXPOSURE, AND CONDITIONAL WEIGHT-FOR-LENGTH-GAIN OVER THE FIRST 2 YEARS OF LIFE**


**OBJECTIVE:** Rapid conditional weight-for-length-gain (CWFLG) over the first two years of life is a significant marker of obesity risk. The objective of this study was to prospectively examine dose-response, timing of fetal tobacco exposure, and second-hand smoke exposure effects on CWFLG by 2 years of child age. **METH-ODS:** The sample was recruited in the first trimester of pregnancy with repeated assessments of prenatal tobacco exposure (PTE) using calendar based methods for maternal report, maternal salivary cotinine, and nicotine metabolites in infant meconium and delivery. Second-hand smoke exposure was assessed during the 2-9 month, and 24 month visits using infant saliva samples. CWFLG was measured in toddlers exposed to tobacco in uterus (n = 117) and a demographically similar comparison group of non-exposed toddlers (n = 57) at 2 years of age. **RESULTS:** Across the two criteria set forth by the World Health Organization, 43% (n = 74) of the toddlers in our sample were considered to be normal or healthy weight, 35% (n = 62) were at risk for being overweight, 18% (n = 31) were overweight, and 4% (n = 7) were obese by 2 years of age. The mere presence or absence of PTE was not predictive of greater CWFLG by 2 years of age (Beta = .06, p = .38). However, higher doses of PTE, as indicated by average number of cigarettes per day, were prospectively predictive of more rapid CWFLG. Postnatal second-hand smoke exposure was not associated with CWFLG. **CONCLUSIONS:** PTE is related to restricted growth at birth, yet associated with accelerated CWFLG by 2 years of age. Our findings show that PTE group status is an insufficient measure of PTE when examining obesity risk in children, but rather underscore the importance of dose-response relationships and the timing of exposure of PTE for CWFLG. Results highlight the importance of interventions aimed at reducing smoking throughout pregnancy, with continued booster sessions toward the end of pregnancy.

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### POS1-35
**THE ACUTE EFFECTS OF EXERCISE ON AD LIBITUM SMOKING, SMOKING TOPOGRAPHY, AFFECT, AND WITHDRAWAL SYMPTOMS**

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Research has repeatedly demonstrated that exercise favourably influences cravings during a period of nicotine deprivation. The impact of acute exercise on objectively measured smoking behaviour, such as ad libitum smoking and smoking topography, and the mechanisms underlying these effects are less clear. The present study further examined the relationships between these smoking-related exposure elements and tobacco withdrawal symptoms and affect been appraised. In this study, 110 smokers (male = 56, M age = 33.1, FTCD = 4.2, M cigarettes/day = 15.4) were assigned to one of three exercise conditions: a 10-minute moderate intensity exercise (MEG; 40-68% of heart rate reserve) or an attention control condition (AC), or no exercise (n = 36). To determine the importance of interventions aimed at reducing smoking throughout pregnancy, with continued booster sessions toward the end of pregnancy.
cravings and anxiety, as identified from Sobel and bootstrapping tests (Preacher and Hayes, 2004). Repeated measures ANOVAs did not reveal interaction effects for any of the smoking topography, albeit a significant decrease in puff duration surfaced for exercisers who reported further craving reduction. Compared to PSQ, MEG significantly attenuated cravings, affect, and most tobacco withdrawal symptoms. Significant relationships between these variables and ad libitum smoking behaviour (i.e. time to smoke and topography) were also elucidated. Based on this evidence, an acute bout of moderate intensity exercise has utility as a harm reduction strategy for time to first cigarette, cravings, affect, and tobacco withdrawal symptoms but not with respect to a smoker’s behavioural interaction with a cigarette. Cravings and anxiety appear to play a mechanistic role through which exercise delays time first cigarette.

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POS1-36 PEDIATRIC-BASED PARENTAL TOBACCO TREATMENT AND REFERRAL CLINICAL DECISION SUPPORT TOOL

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PURPOSE: To create, implement, and evaluate the feasibility of a clinical decision support (CDS) tool within the electronic health record (EHR) to help primary care pediatricians provide smoking cessation treatment to parents/caregivers who smoke and refer them to an adult tobacco treatment program. METHODS: Mixed method pilot study of pediatricians and parents/caregivers at one primary care site. Pediatricians received training in smoking cessation counseling, nicotine replacement therapy (NRT) prescribing, parental referral, and use of a CDS tool to aid in this process. The tool would: prompt providers to ask about smoke exposure at all routine and acute visits, link to an electronic NRT prescription, and refer to the treatment program. We evaluated pediatricians’ acceptability and usability of the tool and parents’ acceptability of treatment and follow-up with the treatment program. RESULTS: During the study period (June-August 2015), 104 parents were referred by 20 out of 29 (69%) eligible pediatric providers. All providers surveyed (17 out of 20) found the tool helpful, with a System Usability Scale score of 83 out of 100 (good to excellent range). Of parents successfully contacted by the treatment program and surveyed (69, 66% of those referred), 52 were offered a NRT prescription, 44 received a prescription, and 17 had filled the prescription and were currently using NRT. While the majority of parents surveyed (88%) reported being satisfied or very satisfied with the provider treatment and referral, no parents followed up with the treatment program. Barriers cited included work and childcare conflicts, transportation issues, and general stress. CONCLUSIONS: A CDS tool to help primary care pediatricians provide smoking cessation treatment was feasible and highly usable. Parents accepted pediatric-based smoking cessation treatment. Future work is needed to improve parent acceptability of referral programs and investigate additional models, such as co-locating services or embedding experts in pediatric settings.

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POS1-37 HEALTHCARE PROVIDER COUNSELING TO QUIT SMOKING AND DESIRE TO QUIT: THE MEDIATING ROLE OF SMOKING OUTCOME EXPECTANCIES

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The U.S. clinical practice guideline on treating tobacco use and dependence recommends providing strong advice to quit to every tobacco user seen in a healthcare setting. However, the mechanism through which this counseling encourages patients to quit has not been adequately studied. We tested a conceptual model proposing that the association between brief healthcare provider counseling and patients’ desire to quit is mediated by patients’ negative health and psychosocial outcome expectancies of smoking. Cross-sectional data were collected online from 420 adult smokers. Structural equation modeling (SEM) was used to test associations between receiving counseling to quit in the past year, negative health and psychosocial outcome expectancies of smoking, and desire to quit. We also tested whether negative outcome expectancies and desire to quit differed depending on whether the counseling involved advice to quit (mention of treatment options) or assistance to quit (recommending a product, prescription or program to help the patient quit), as well as the patient’s level of smoking. Bivariate associations indicated a stronger desire to quit among patients who received healthcare provider assistance to quit compared to patients who received no counseling (p<0.05). SEM results indicated that the association between counseling and desire to quit was fully mediated by patients’ negative health and psychosocial outcome expectancies of smoking. After accounting for the mediating role of outcome expectancies, the direct effect of counseling (and smoking level) on desire to quit was non-significant. Given that the time needed to counsel patients about smoking is a concern for many healthcare providers, using this time as effectively as possible is important. Results suggest that this time should be spent providing assistance to quit rather than just advice to quit, and incorporating techniques to increase patients’ negative health and psychosocial expectancies of smoking. Further, the lack of significant difference between lighter and heavier smokers in their desire to quit reaffirms that brief counseling should be offered to all patients who smoke.

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POS1-38 ELECTRONIC NICOTINE DELIVERY DEVICES FOR PERIOPERATIVE HARM REDUCTION

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INTRODUCTION: Cigarette smoking is known risk factor for postoperative complications, including cardiac, respiratory, and wound-related complications. Quitting or cutting down around the time of surgery can reduce these risks, but can be difficult for most patients. This study aimed to determine the feasibility of using ENDDs to reduce the consumption of cigarettes in the perioperative period and determine the association between ENDD use and cigarette smoking from the time of pre-surgical evaluation up to 2 weeks after surgery among a range of cigarette smokers, including those who did not want to quit. METHODS: An open-label observational study of 80 cigarette smoking adults who were scheduled for elective surgery at Mayo Clinic Rochester and seen in the pre-operative evaluation clinic between December, 2014 and June, 2015. Subjects were given a supply of electronic cigarettes sufficient for use in the preoperative period and up to two weeks postoperatively in one of three varieties depending on patient preference and baseline cigarette consumption. They were encouraged to use the device whenever they considered using a tobacco cigarette. Daily use of regular and E-cigarettes was recorded in a diary and returned to study staff. Surveys for smoking behavior and E-cigarette use were conducted at baseline, 14-days and 30-days post-operatively. RESULTS: 80 patients (76% of approached) agreed to participate. Rates of follow-up were 71% for diary return, 84% for 14-day follow-up, and 89% for 30-day telephone follow-up. 67 (87%) participants tried ENDDs during the study period. 21 (32%) of them used E-cigs before their surgery. 58 (87%) of participants, 100% of all E-cig users) after surgery and 12 (33%) on the day of surgery. At 30-day follow-up, 34 (51%) of participants who had used ENDDs planned to continue using them. Average cigarette consumption decreased from 15.6 per person/day to 7.6 over the study period. At 30 days, 11/67 (17%) reported
complete abstinence from cigarette smoking. CONCLUSION: Adults schedules for elective surgery were willing to try ENDDs to cut down or quit smoking around the time of surgery. By 30-days post-operative, average cigarettes smoked per day decreased by more than half with ENDD use, with a significant proportion of subjects reporting complete abstinence from regular cigarettes. This pilot data informs future work looking at long-term surgical outcomes and abstinence rates associated with ENDDs use in the perioperative period.

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POS1-39
ASSOCIATION OF LEISURE TIME EXERCISE AND CIGARETTE CRAVING AND WITHDRAWAL BY SEX AND AGE
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BACKGROUND: Several studies have investigated effects of exercise on cigarette craving and withdrawal, with mixed results. Some studies have demonstrated that exercise reduces cravings and has a favorable effect on withdrawal symptoms while other studies have shown exercise to have no significant effects on these measures. Factors that may help explain these mixed results include the type of exercise, age and the role of sex differences. To our knowledge no study has investigated how exercise (level and frequency) influence smoking symptomatology differently by age and sex. METHODS: This is a secondary data analysis that includes men age 18-60 and women age 18-50, who are in stable physical and mental health, smoke > 5 cdp for a minimum of 1 year, and who are motivated to quit smoking > 7 on a 10 point Likert-type scale. Ad libitum smoking participants in the parent study attend a baseline visit prior to randomization. At this visit participants completed several questionnaires including the LTEQ (level and frequency of exercise) and the MNWS (nicotine withdrawal and craving). Linear regression was used to examine the relationships between exercise, age and sex on nicotine withdrawal and craving. RESULTS: Participants (men=95, women=42) were an average age of 35.8 and mostly identified as white, 62.7%. The mean weekly MET (units of metabolic equivalence) was 39.4 (+ 33.3). Weekly exercise score was not significantly associated with craving (p=0.17), but being over 40 years old was associated with a higher craving score among men (p=0.03). Withdrawal scores were on average lower for higher weekly exercise scores, but this effect was not significant (p=0.05). Among males, there was also a significant, but small, increase in withdrawal scores with increased age (p=0.02). CONCLUSION: These results indicate that age, sex and exercise level and frequency may influence smoking symptomatology. These data suggest that age may play a role in cigarette withdrawal and craving among men more so then women and exercise may help mediate smoking withdrawal. These findings warrant further exploration.

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POS1-40
EYE-TRACKING AS AN INDEX OF ATTENTIONAL BIAS TO SMOKING AND FOOD CUES IN YOUNG FEMALE SMOKERS
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Cross-sectional and experimental research has shown that female smokers use cigarettes to manage dietary restraint and suppress body image dissatisfaction. The goal of this study was to investigate the cross-motivational impact of food and cigarettes by comparing attentional bias to smoking cues against other cues (food and jewelry), and testing the degree that in-vivo stimuli (cigarettes, food, and jewelry) affect attentional bias to traditional pictorial cues. Thirty-five female smokers completed three passive image-viewing tasks during which they viewed images containing smoking, food, and jewelry pictorial cues on a computer screen. During these tasks, participants held smoking, food, or jewelry in-vivo stimuli, and eye-tracking technology collected gaze data. We hypothesized that in-vivo appetitive stimuli would produce attentional bias, with in-vivo smoking stimuli increasing attention to smoking pictorial cues and in-vivo food stimuli increasing attention to smoking and food pictorial cues. In contrast to these hypotheses, in-vivo smoking and food stimuli did not prime attentional biases to smoking or food pictorial cues. However, initial and maintained attentional biases were seen toward smoking pictorial cues over both food and jewelry pictorial cues when participants were administered a non-appetitive (jewelry) in-vivo stimulus. The results within the jewelry in-vivo condition replicate previous research reporting attentional biases for smoking cues among smokers, and they extend them by demonstrating that bias toward smoking cues is stronger than toward alternative appetitive stimuli. These results also show that attention may change as smokers encounter other in-vivo appetitive stimuli. These findings encourage further exploration of the relationship between motivation and attention and of ways to translate attentional bias research from the laboratory to the natural environment.

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POS1-41
SHORT-TERM EFFECTIVENESS OF ONE SMOKING CESSATION UNIT IN BUENOS AIRES CITY SINCE 2014 TO 2013: PROSPECTIVE COHORT STUDY
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Even though there is adequate evidence about the effectiveness of smoking cessation treatments, there are few reports on this topic in our country. This study evaluated the interventions applied in the Smoking Cessation Unit (SCU) of the Hospital de Clínicas "José de San Martín" (University of Buenos Aires) following the “Russell Standard (Clinical)”. They were established by the National Health Service (UK) to assess the performance of the Stop Smoking Services. A recent evaluation of their first 10 years found rates of abstinence at four weeks about 35%. Objectives: To assess the effectiveness of the intensive interventions in patients assisted in the SCU during 2014 to 2015 at four weeks and to identify predictive factors associated with the success of the treatment. Methods: This is a cohort study developed since May 2014 to April 2015. A sample of 106 patients was chosen systematically. Only those who completed at least one treatment session were included in the analysis. Data on demographics, related to addictive behavior and the prevalence of non-psychotic mental disorders (NPMD) were collected. This prevalence was evaluated by the implementation of the “Self Reported Questionnaire” test or SRQ-20, developed by the WHO and locally validated. The score goes from 0 to 20. More than 7 points means probably NPMD. Cessation rates at 4 weeks were obtained by self-reporting and measurement of CO in expired air. Results: The sample included 106 patients who started treatment. The mean age was 50.7 years (SD ±13.7), 66% were women with a mean of 13.62 years of education. Forty percent reported almost one smoking related disease and the NPMD prevalence was 35.8%. The mean number of cigarette/day was 23.5 (SD ± 14.8) and the mean for the Fagerström score was 5.2 (SD ± 2.2). The abstinence group had less CO initial (16.5ppm SD ±9 vs. 20.6 SD±10 - p: 0.045). The abstinence at 4 weeks verified CO was 32.1 % and 35.9 % by self-report. The predictor of abstinence was the number of sessions (OR = 0.56, 95% CI 0.44 -0.72). Conclusions: Satisfactory rates of abstinence at short time were obtained.

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POS1-42
SYNERGISTIC EFFECT OF DYSPHORIA AND ANXIETY SENSITIVITY IN RELATION TO SOCIAL COGNITIVE DETERMINANTS OF SMOKING AMONG TREATMENT-SEEKING SMOKERS
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Emotional disorders significantly increase risk of smoking cessation failure (Piper et al., 2011) and contribute to maladaptive cognitive beliefs and cognitive-afec-
tive reactions to tobacco use (Vujanovic et al., 2010) among current smokers. Anxiety sensitivity (AS), the cognitive-based tendency to expect anxiety-related sensations to be personally harmful (Reiss & McNally, 1985), is related to both emotional disorders and smoking (Johnson et al., 2013; Wong et al., 2013). There is little understanding of how AS interacts with other affective constructs that also relate to smoking, such as dysphoria, a symptom cluster of depression (Leventhal et al., 2011). Thus, the present study examined the interactive effects of AS and dysphoria on expectancies for smoking to reduce negative affect, barriers for cessation, and smoking-specific experiential avoidance. Participants included 448 treatment-seeking smokers (47.8% female; M_age = 37.2, SD = 13.5). Three hierarchical regression analyses tested the proposed models. First, theoretical-relevant covariates were entered. Next, AS and dysphoria were entered. Finally, the AS-dysphoria interaction term was entered. Results revealed a significant interaction term for each of the three criteria. Simple slope analyses indicated a significant slope for the relation between dysphoria and criterion variables at lower levels of AS, but not at very high levels of AS. Findings indicate that smokers with greater dysphoric symptoms and lower AS report the most maladaptive smoking cognitive beliefs and reactions, whereas smokers with fewer dysphoric symptoms and lower AS report the fewest maladaptive smoking cognitive beliefs and reactions. The findings suggest that elevating dysphoric symptoms is important to consider in understanding AS-smoking relations, possibly by hindering cognitive capacities. Overall, the present study serves as an initial investigation into the interplay between AS and dysphoria on clinically relevant smoking processes among adult treatment-seeking smokers. Future work is needed to explore the extent to which the interactive effects of dysphoria and AS relate to other smoking processes and quit behavior.

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POS1-43 UPTAKE OF SMOKING CESSATION STRATEGIES BY SMOKERS WITH A MENTAL ILLNESS

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BACKGROUND: Compared to the general population, persons with a mental illness experience disproportionate tobacco related morbidity and mortality associated with a markedly higher smoking prevalence. Psychiatric patients with smoking disorders represent an opportunity to initiate the provision of smoking cessation care. This study describes the uptake of smoking cessation strategies proactively and universally offered to a population of psychiatric inpatients upon admission, and explores factors associated with such uptake. METHODS: Study design was the form of a randomised controlled trial. Data was collected from 128 patients following a hospitalisation period of at least a week. An assessment was completed on discharge, and again at 6 months. Analysis included bivariate analysis using the individual-level posterior probabilities and individual-level logistic regression analyses. RESULTS: Fifty-one per cent of participants utilised project delivered telephone smoking cessation counselling and nicotine replacement therapy (NRT), and QuitLine support. Factors associated with uptake of cessation strategies were explored using 2-by-2 and multivariable logistic regression analyses. Ten per cent of participants utilised project delivered smoking cessation counselling calls and NRT, respectively. Eleven per cent used the QuitLine. Fifty-two per cent of participants accepted more than seven project delivered telephone cessation counselling calls, and 70 per cent reported NRT use during more than half of their accepted calls. Older age, seeing oneself as a non-smoker, and lighter and irregular smoking were associated with uptake of behavioural cessation strategies. Whereas higher nicotine dependence, not residing in a smoking-free home, and use of NRT whilst an inpatient were associated with uptake of pharmacological strategies. CONCLUSIONS: A large proportion of smokers with a mental illness took up a proactive offer of strategies to support their stopping smoking. Consideration by service providers of factors associated with uptake of such strategies may increase further the proportion of smokers with mental illness who use evidence-based cessation strategies.

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POS1-44 SEE ME SMOKE-FREE: AN MHEALTH APP FOR WOMEN TO ADDRESS SMOKING, DIET, AND PHYSICAL ACTIVITY

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BACKGROUND: Women report greater difficulties quitting smoking and are more likely to relapse than men. Concerns about weight gain, negative body image, and low self-efficacy may be key factors affecting smoking, diet, and exercise behavior of women. A multi-behavioral approach, including diet and physical activity, may be more effective at helping women quit. Guided imagery has been successfully employed to address body image concerns and self-efficacy in smoking cessation, diet, and exercise. While imagery is an effective therapeutic tool for behavior change, the mode of delivery has generally been in-person which offers limited reach. mHealth apps offer a unique channel through which to distribute imagery-based interventions. OBJECTIVES: To develop and evaluate the feasibility and acceptability of a smoking cessation app for women designed to simultaneously address smoking, diet, and physical activity. METHODS: We created the program content and designed the functionality of the See Me Smoke-Free app for use on the Android platform in collaboration with focus group and in-depth interview participants. We then programmed and tested the application’s usability in preparation for a larger study, with 30- and 90-day post-enrollment. RESULTS: To date, the app has been downloaded more than 360 times, 151 women enrolled, and 78 women were dropped or withdrawn from the study, leaving a final sample of 73. We have completed the 30-day assessment, with a 92% follow-up rate. Our primary outcomes are self-reported 7-day point prevalence and prolonged abstinence at 30- and 90-days. Secondary outcomes include physical activity, diet, weight, weight concerns, body image and self-efficacy. We also constructed program use metrics and created composite exposure scores to examine correlations between program exposure/engagement and outcomes. Finally, we plan to conduct a study with participants and non-participants using data from Google analytics. CONCLUSIONS: The study’s findings demonstrate the feasibility and acceptability of an app which uses guided imagery to address multiple behaviors critical to women’s health.

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POS1-45 SHAPES AND DETERMINANTS OF TREATMENT VISIT TRAJECTORIES IN A FLEXIBLE SMOKE CESSATION TREATMENT PROGRAM

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BACKGROUND: In a pragmatic and flexible smoking cessation treatment program that provides up to 26 weeks of brief behavioural counseling and individualized dosing of nicotine replacement therapy at no cost, no rigid treatment visit schedule is proscribed. Given this flexibility, the aim of this study was to describe the observed shapes of smoking cessation treatment visit trajectories. METHODS: The program included 10,672 patients who began treatment between January 1, 2014 and July 31, 2014, and had a total of 41,187 clinical treatment visits. Number of visits was described using univariate statistics. Group-based trajectory modeling was used to identify clusters of individuals who followed similar treatment visit trajectories. The zero inflated poisson model was specified with time rescaled to 4 week periods since program enrollment. Patterns of trajectory group membership were created via bivariate analysis using the individual-level posterior probabilities and individual-level characteristics. RESULTS: Patients had a mean of 3.9 treatment visits (sd 3.5, range 1 to 31). 29.4% of patients had one visit only. Three treatment visit trajectories were identified. In each, mean treatment visits peaked initially and decreased thereafter, but the shape of the decrease differed. Group 1, which had a trajectory of sustained visit frequency, had a peak mean visit frequency of 1.75 (sd 0.88), decreased to a mean of 0.5 and maintained that level until near the end of the enrollment period. Group 2 began with a peak mean visit frequency of 1.49 (sd 0.70) but decreased to near zero levels immediately. Group 3 began with a mean of 1.98 (sd 0.90) and gradually declined in visit frequency, nearing zero levels about halfway through the enrollment period. Group 1 comprised 9.3% of participants, group 2 comprised 68.0% of participants and group 3 comprised 22.7% of...
participants. Trajectory group membership is associated with age, comorbidities at enrollment, and clinic type, but not gender. DISCUSSION: In a highly flexible smoking cessation program, patients cluster into several treatment visit trajectories, the shape and prevalence of which drive health resource utilization and costs.

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POS1-46
CIGARETTE SMOKING IN PREGNANT SUBSTANCE USERS: ASSOCIATION WITH SUBSTANCE USE AND DESIRE TO QUIT
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BACKGROUND: Cigarette smoking is prevalent in pregnant substance users. Despite the pervasiveness and adverse consequences of smoking in this population, smoking generally receives little attention in substance use disorder (SUD) treatment. This may be due to multiple factors including the perception that cigarette smoking is unrelated to substance use and that patients do not want to stop smoking. However, research in non-pregnant substance users has found an association between smoking and substance use and a study with pregnant substance users found that 50% were interested in quitting smoking. The present study, conducted with pregnant women entering outpatient SUD treatment programs not offering smoking-cessation treatment, evaluated: 1) the association between cigarette smoking and substance use frequency and 2) interest in quitting smoking.

METHODS: Secondary analysis of a randomized, multi-site trial evaluating the efficacy of motivational enhancement therapy, relative to treatment as usual, in improving treatment outcomes in 200 pregnant substance users, 145 (72.5%) of whom smoked cigarettes at baseline. Cigarette-use-days and drug/alcohol-use-days were assessed with self-report; illicit drug use was assessed with urine drug screens (UDSs). These measures were obtained weekly for the 4-week active study phase and at 1 and 3 month follow-ups. Interest in quitting smoking was assessed with the Thoughts about Abstinence assessment. RESULTS: Compared to non-smokers, smokers had a greater percentage of drug/alcohol-use-days (X²=5.30, p<0.05). At treatment entry, 48% of cigarette smokers reported wanting to quit smoking. Conclusions: These findings suggest that pregnant substance users who smoke might require more intensive SUD treatment and that concurrent SUD and smoking-cessation treatment would likely be of interest for approximately half of pregnant substance using smokers.

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POS1-47
RELATIONSHIP OF TOBACCO CESSION PHARMACOTHERAPY OPTIONS AND STANDARDS FOR NURSING PRACTICE
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BACKGROUND: For well over a decade, seven front-line FDA approved pharmacotherapy options have been recommended for treating tobacco dependence. Identifying evidence-based gaps in tobacco cessation practices in acute and critical care settings may help to empower nurses to lead system changes to improve hospital quality core measures established by the Joint Commission (JC) and Centers for Medicare and Medicaid (CMS). AIM: To describe pharmacotherapy trends for tobacco dependence (standing orders, nicotine replacement therapy medications and non-nicotine replacement therapy medications) among different acute and critical care settings throughout the United States.

METHOD(S): Nurses attending the American Association of Critical Care Nurses National Teaching Institute were invited to complete a 24-item survey. Data were gathered in Boston, Orlando, and Chicago over a three-year period. Descriptive statistics and logistic regression were used for data analysis. RESULTS: Among the 1,773 nurse participants, the vast majority (64%) reported nicotine replacement therapy (NRT) patch, lozenge and gum were the leading pharmacotherapy options in their healthcare organization. Nurses with higher levels of confidence with tobacco cessation interventions were associated with health systems that offered NRT, plus Bupropion (Zyban) or Varenicline (Chantix) (OR = 2.22, CI = 1.53 – 3.23; p value less than 0.001). Nurses with higher levels of interest in learning evidenced-based strategies to help patients quit tobacco use were also affiliated with health systems with more robust pharmacotherapy treatment options (OR = 2.79, CI = 1.34 – 5.80; p value 0.006). CONCLUSIONS: While the results of this study revealed existing gaps in which pharmacotherapy options for tobacco dependence treatment can be optimized, opportunities abound to create strategies to empower nurses to advocate for health system policy changes to improve health outcomes in acute and critically ill tobacco-dependent populations.

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POS1-48
PERCEPTIONS OF SNUS AMONG U.S. ADULT SMOKERS GIVEN FREE PRODUCT
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BACKGROUND: The latest generation of alternative tobacco products (ATPs) includes snus, an oral, spitless, smokeless tobacco product. In the United States (US), snus uptake is nominal, even among the intended consumer (i.e., smokers). This longitudinal study examines perceptions of snus among US smokers given a free sample. METHOD: Adult smokers (n=543; 69.2% female; Mean age=49.3 years), uninterested in quitting, received free snus for ad libitum use. Based on their snus use during a 6-week sampling period, participants included: 1) never users (18.4%, n=100); 2) experimenters; i.e., used at least once, but not during the last week of sampling (33.1%; n=180); and 3) current users; i.e., used during last week of sampling (48.4%; n=263). RESULTS: At the end of the sampling period, all participants perceived cigarettes as more harmful than ATPs; however, those who became current users were more likely than experimenters to report that switching to ATPs would lower their risk for personal health problems (66.5% vs. 50.0%; p=.006). Current users also reported greater relief of negative affect and craving reduction (p<.001) than experimenters. Finally, current users were more likely than experimenters to describe snus in favorable terms with respect to ease of use (66.8% vs. 38.3%), satisfaction (19.7% vs. 4.5%), and liking (22.0% vs. 4.6%; p's<.001). Current users were more likely than experimenters to describe snus in favorable terms with respect to ease of use (66.8% vs. 38.3%), satisfaction (19.7% vs. 4.5%), and liking (22.0% vs. 4.6%; p's<.001). Conclusions: Even among smokers who became current snus users, snus was perceived as a poor substitute for cigarettes. Unlike in Scandinavian countries, snus may have little positive impact in tobacco control in U.S.

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POS1-49
EFFECTIVENESS OF A LAY-LED TOBACCO CESSION TRIAL AMONG ADULT APPALACHIAN SMOKERS: DOSE MATTERS
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BACKGROUND: Lay health advisers may contribute to the delivery of scientifically valid community-based tobacco dependence treatment programs. This study examined the effectiveness of a cessation intervention for underserved smokers delivered by a lay health adviser (LHA) with supervision by a clinic nurse. METHOD: Adult daily smokers from 12 Appalachian counties were enrolled in a group...
randomized trial. Intervention county smokers received 7 LHA-led face-to-face counseling sessions over 10 weeks and free nicotine replacement therapy (NRT) for 8 weeks. Comparison county smokers received 1 visit from a LHA who promoted the Ohio QuitLine and access to 5 proactive and as needed reactive counseling calls and 8 weeks of free NRT. Follow-up data was collected at 3, 6 and 12m. The primary outcome was 12m biochemically verified abstinence; it was hypothesized that intervention county smokers would have 10% higher abstinence (15% vs. 5%), RESULTS: Mean age of the sample (n=707) was 47; 32.3% were male; 47% had ≤ HS degree/GED; and 50% reported a household income < $50,000. Mean daily cigarette consumption was 21.6 and past year average quit attempts were 1.4. There were no group differences in socio-demographic and tobacco-related variables. Biochemically-confirmed abstinence rates for the intervention group at 3, 6 and 12m were 12.2, 11.3 and 13.3%, respectively, with comparison group rates at 8.5%, 8.5% and 10.7%. Group differences were not statistically significant. However, there was a significant association between dose (adherence to counseling) and abstinence for both groups. Those who received 6-7 face-to-face counseling visits (OR=3.8, CI = 1.3-10.9) or 5+ Quitline calls (OR=3.5, CI = 1.7-7.4) were more likely to be abstinent at 12m. Covariates associated with 12m abstinence included daily cigarette consumption, Heavyness of Smoking Index score, CES-D-10 score and self-efficacy for quitting score. Adjustment for these covariates did not substantially alter estimated treatment effects. CONCLUSION: Abstinence rates by group were modest but adherence to counseling improved 12m outcomes. LHA-delivered treatment approaches deserve further study in community settings.

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POS1-50
VALIDITY OF THE CIGARETTE EVALUATION QUESTIONNAIRE IN PREDICTING THE REINFORCING EFFECTS OF CIGARETTES THAT VARY IN NICOTINE YIELD UNDER DOUBLE-BLIND CONDITIONS

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INTRODUCTION: Validity studies evaluating self-report measures in relation to actual behavioral preference of cigarettes varying in nicotine yield are needed. We examined correspondence between ratings on the modified Cigarette Evaluation Questionnaire (mCEQ) and choices abstinent smokers made when given the opportunity to choose between cigarettes varying in nicotine yield under double-blind conditions. Current smokers (N=18) participated in a multi-site, pilot laboratory study evaluating Spectrum research cigarettes (0.3, 0.12, 0.26, 0.80 mg yield). In Phase I (4 sessions) the mCEQ was administered following ad-lib smoking of one cigarette yield. In Phase II (6 sessions) yield preference was assessed (number of puffs chosen from each Spectrum cigarette within concurrent choice tests). A confirmatory factor analysis (CFA) of the mCEQ was conducted along with tests of simple effects of mCEQ scores at each level of yield preference. RESULTS: The CFA indicated a factor structure consistent with previous studies (Satisfaction, Psychological Reward, Aversion, Respiratory Sensations, Craving Reduction subscales). Satisfaction ratings significantly predicted preference for the higher compared to the respective lower yield cigarette in four of six choice tests (0.12 vs. 0.03, p = 0.03; 0.80 vs. 0.03, p = 0.01; 0.80 vs. 0.12, p = 0.02; 0.80 vs. 0.26, p = 0.03). Scores on the other mCEQ subscales were not significantly associated with yield preference. CONCLUSIONS: These results provide support for the validity of the Satisfaction subscale in predicting the relative reinforcing effects and potential abuse liability of cigarettes varying in nicotine yield.

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POS1-51
PAIN-RELATED ANXIETY AS A PREDICTOR OF EARLY LAPSE AND RELAPSE TO SMOKING

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Previous research has found that pain-related anxiety is positively associated with tobacco dependence, smoking dependence motives, self-reported barriers to smoking cessation, and expectancies that smoking will decrease negative affect. Although these emerging findings suggest that pain-related anxiety may play a role in the maintenance of smoking, no previous research has examined pain-related anxiety as a predictor of cessation outcomes. The current sample consisted of 47 daily smokers (34% female, M CPD = 15.5, SD = 5.8) who participated in a self-guided quit attempt. Pain-related anxiety was assessed at baseline using the PASS-20, which yields a total score that ranges from 0-100 (sample M = 27.9, SD = 16.1, range = 68). Number of days to early lapse (i.e., any instance of smoking during the first 14 days post-quit) and early relapse (i.e., 7 consecutive days of smoking that began during the first 30 days post-quit) were recorded using timeline follow-back procedures. Cox regression analyses indicated that pain-related anxiety was a significant predictor of early smoking lapse, such that for every one point increase on the PASS-20, the risk of early lapse increased by 3.2% (p < .05). Similar results were observed for early relapse, such that for every one point increase on the PASS-20, the risk of early relapse increased by 3.4% (p < .05). These effects were evident above and beyond the variance accounted for by sociodemographic factors, nicotine dependence scores, past-month pain intensity, anxiety sensitivity, and generalized anxiety. Among early lapsers, Kaplan-Meier survival analyses further revealed that greater pain-related anxiety predicted a more rapid trajectory to lapse. Among early relapsers, no differences in relapse trajectories were observed as a function of pain-related anxiety. These data provide additional support for the notion that pain-related anxiety may contribute to the maintenance of tobacco addiction. Discussion will include directions for future research and the utility of addressing pain-relevant factors in the context of smoking cessation.

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POS1-52
ABSTINENCE-INDUCED EFFECTS OF CIGARETTE SMOKING ON EMOTION DYSREGULATION IN SMOKERS WITH AND WITHOUT ADHD

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Individuals with ADHD smoke cigarettes at a higher rate and exhibit greater difficulty quitting than smokers without ADHD. Although emotion dysregulation is elevated in ADHD, little is known about emotional dysregulation as a behavioral mechanism that accounts for increased risk for poor cessation rates in cigarette smokers with ADHD. This study aimed to examine abstinence-induced effects of smoking on emotion dysregulation in cigarette smokers with and without ADHD. Emotion dysregulation was predicted to be higher in ADHD smokers after 24-hour smoking abstinence in comparison to non-ADHD smokers. Cigarette smokers with (n = 16) and without (n = 20) ADHD completed two experimental sessions: smoking as usual (smoking satiated) and after biochemically-verified 24-hour smoking abstinence (smoking abstinence). The following measures of emotion dysregulation were administered: the modified Paced Serial Addition Task, modified Mirror Tracing Performance Task, and the Difficulties in Emotion Regulation Scale. Group (ADHD, non-ADHD) x condition (smoking satiated, smoking abstinence) interactions were not significant, although main effects for condition were significant for the modified Paced Serial Addition Task (p < .03) and Difficulties in Emotion Regulation Scale (p = .04). Main effects for group status were significant for the modified Paced Serial Addition Task (p < .01), modified Mirror Tracing Performance Task, and the Difficulties in Emotion Regulation Scale.
POS1-53
E-CIGARETTE EXPECTANCY PROFILES ASSOCIATED WITH HIGHER RISK OF CONTINUED CIGARETTE SMOKING

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Smokers who switch to e-cigarettes are likely to greatly reduce health risks. However, some e-cigarette users continue to smoke. Prior research showed beliefs about the outcomes of using e-cigarettes (i.e., individual e-cigarette expectancies) are independently associated with quitting smoking. Examining e-cigarette expectancy patterns may provide a more complete picture of associated e-cigarette beliefs, as well as better predict outcomes of interest. The present study used Latent Class Analysis to develop profiles of e-cigarette users (N=1815) based on endorsement of 13 e-cigarette expectancy items. Expectancy patterns noted here include positive aspects (e.g., "E-cigarettes help me deal with anxiety or worry."); addiction (e.g., "I experience cravings for e-cigarettes."); and health risks ("E-cigarettes are hazardous to my health."). Based on Bayesian Information Criteria, the best-fitting model included five classes: Enthusiasts (high probabilities for endorsement of positive aspects and addiction, low probabilities for endorsement of health risks, 37.7% of sample), Critics (low for positive aspects, high for addiction and health risks, 19.8%). Deniers (high for positive aspects, low for addiction or health risks, 17.4%), Conflicted (high for positive aspects, addiction, and health risks, 16.7%), and Unimpressed (low for positive aspects, addiction, and health risks, 8.3%). Compared to all other classes, Critics were more likely to be current smokers (e.g., Odds Ratio: 1.71, 95% Confidence Interval: 1.27-2.32 in comparison to Enthusiasts). Although Critics were also more likely to use first-generation "cig-a-likes" (e.g., OR: 1.70, 95% CI: 1.13-2.58), the greater likelihood of smoking continued to be significant after adjusting for type of e-cigarette used and sociodemographics (AOR: 1.81, 95% CI: 1.32-2.46). Expectancy profiles appear to play an important role in understanding continued dual use. This novel use of LCA may help better understand expectancy patterns, resulting in enhanced ability to develop targeted interventions.

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POS1-54
SEX DIFFERENCES IN INTRAVENOUS NICOTINE DOSE SENSITIVITY AND DISCRIMINATION IN CIGARETTE SMOKERS

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Individual differences in the sensitivity to nicotine may influence vulnerability to tobacco dependence (TD). Here we used an intravenous (IV) nicotine self-administration procedure to characterize the reinforcing threshold and dose-response curve for IV nicotine in male and female TD smokers. Twelve male and 14 female subjects participated in four experimental sessions in which they received sample infusions of saline and nicotine (0.1, 0.2, 0.3 or 0.4 mg) in a randomized crossover design. Immediately following the sample infusions, subjects self-administered either nicotine or saline in six double-blind forced-choice trials. Subjective ratings of stimulation, pleasure and aversion, and heart rate and blood pressure were monitored after each infusion. Nicotine self-administration frequency was negatively correlated with nicotine dose in males, but not in females. Males chose nicotine over saline at ≤0.2 mg, while females showed no choice discrimination. Interestingly, nicotine was rated as less aversive than saline at ≤0.2 mg and more aversive than saline at ≥0.3 mg. Nicotine doses ≥0.1 mg induced positive stimulus and pleasurable subjective ratings. The subjective ratings of nicotine at ≥0.3 mg were enhanced for females compared to males. Nicotine uniformly increased heart rate at ≥0.1 mg and increased blood pressure at ≥0.3 mg in males and females. Individual differences in the subjective effects of nicotine and dose-sensitive choice preference in this dose range may affect vulnerability to TD.

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POS1-55
PREDICTORS OF RESPONSE TO INTERACTIVE-VOICE-RESPONSE FOLLOW-UP CALLS FOLLOWING HOSPITALIZATION

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In 2012, the Joint Commission (JC) which sets quality standards for hospitals in the United States recommended that all current smokers identified upon hospitalization receive tobacco cessation services as an inpatient and be followed up within 1 month after hospital discharge. The current study examines patient response to an automated follow-up call system using interactive voice recognition (IVR) technology that attempted to reach smokers 3, 14 and 30 days after discharge. Data were available from adult current smokers hospitalized at the Medical University of South Carolina (MUSC) between February 2014 and May 2015 who were followed-up by phone at 3, 14 and 30 days after discharge to assess smoking status. Predictors of response to the callback included the patient’s gender, age, length-of-hospitalization, admission to psychiatric ward, whether the patient received a bedside smoking cessation consult while hospitalized, intention to quit smoking, frequency of smoking, and post-discharge diagnosis. There were 5,620 adult smokers enrolled in the program and attempts were made to call all of them within a month after hospital discharge. Forty percent of patients responded to at least one of three follow-up phone calls. Having a psychiatric condition was a predictor of low response to the follow-up callbacks. Receiving bedside counseling was also a significant predictor of response to the callbacks (OR=1.4, 95%CI: 1.19-1.75), even after adjustment for co-variates. Those who recently quit and those who were still smoking but expressed a readiness to quit when seen by the bedside counselor were more likely to respond to follow-up calls. With an automated phone follow-up system we were able to reach 40% of smokers within 1 month after hospital discharge to assess smoking status and make referrals to those needing additional assistance to refrain from smoking.

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POS1-56
ATTENTIONAL BIAS MODIFICATION FOR POSTPARTUM SMOKING
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BACKGROUND: Nearly 80% of smokers who achieve abstinence in pregnancy relapse within a year after delivery. Despite considerable study, few strategies effective in modifying relapse in this population. Smokers exhibit an attention bias for smoking-related cues, which plays a role in the maintenance or escalation of smoking. Attentional bias modification (ABM) using the visual probe task (VP) has been used experimentally to reduce attentional bias (AB) and blunt cue-provoked craving. The goal of this project was to assess AB and test the use of smart phones to administer ABM as an intervention for relapse prevention in postpartum women. METHOD: 10 postpartum smokers who achieved abstinence during pregnancy completed momentary assessments (EMA) administered on a personal digital assistant to assess AB (utilizing the smoking Stroop), and the role of affective/situational stimuli on the relapse process. Women completed 4 daily random assessments (RAs) that included data on craving, AB, affect, and environmental factors for 2 weeks after delivery. In a follow-up experiment, 11 abstinent pregnant smokers were asked to carry around a smartphone for 1-2 weeks in their last month of pregnancy and immediately postpartum for 2 weeks. Participants were randomized to either receive ABM (N=10) or attentional control (N=5), and asked to complete 4 daily RAs that included the ABM (or control) procedures utilizing the VP task. RESULTS: In the EMA only study, subjects who lapsed/relapsed reported higher levels of craving, and exhibited AB that was associated (p < 0.05) with craving. In the ABM study, craving significantly increased from pregnancy (M=1.40, SD=1.23) to postpartum (M=2.82, SD=2.27). AB assessed on the smartphone was more negative in the ABM group (n=35 assessments, M=-52.6 ms, SD=1.23) vs. controls (n=44 assessments, M=18.5 ms, SD=146) (p < 0.05, using LMM). CONCLUSION: These pilot studies demonstrate that women experience heightened craving postpartum, which is associated with AB, and that ABM can reduce AB to smoking cues in perinatal women. Further research is needed to test the efficacy of ABM as a smoking relapse-prevention intervention in postpartum women.

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POS1-57
MULTIPLE HEALTH RISK BEHAVIORS AMONG YOUNG ADULTS PARTICIPATING IN A RANDOMIZED CONTROLLED SMOKING CESSATION TRIAL ON FACEBOOK
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BACKGROUND: Young adults frequently engage in health risk behaviors that put them at risk for negative psychological, physiological, and social consequences. We examined multiple health risk behaviors among young adult smokers participating in a randomized controlled trial of the Tobacco Status Project (TSP), a Facebook-based smoking cessation intervention. METHODS: A total of 501 young adult smokers (mean age=20.9; 54.7% female; median years of education: 12) were recruited online to participate in a Facebook-based smoking cessation trial. The Staging Health Risk Assessment screened for risk status and readiness to change 10 health behaviors including smoking at baseline. Latent class analysis identified number and health risk profiles of groups of young adults. RESULTS: Participants reported an average of 5.4 (SD=1.7) risk behaviors, including smoking (100%), high fat diet (84.8%), poor sleep hygiene (71.5%), and low fruit and vegetable intake (69.5%). With regard to smoking, 21.4% of participants were ready to quit within the next 30 days and readiness to change other risk behaviors ranged from 40.1% (stress) to 9.1% (marijuana use). A 3-class model fit the data best: A Low Risk group (29.1% of sample) with low likelihood of risk on all behaviors except smoking; a Substance Use group (14.0%) characterized by episodic heavy drinking, marijuana use, and other illicit drug use; and a Poor diet/activity group (56.9%), with a high percentage of members at risk for a low fruit and vegetable intake, high fat diet, and inactivity. Those in the Substance Use group were more likely to be male (p<0.01) and non-daily smokers (p<0.05) than members of the other two groups and had a higher household income than the Poor diet/activity group (p<0.01). The Poor diet/activity group reported stronger nicotine dependence (FTND; p<0.05) than the Low Risk group. DISCUSSION: Young adult smokers engage in multiple other risk behaviors, with high risk targets for behavior change likely to be other substance use and diet/inactivity. Given differences in readiness to change across health risk behaviors, approaches tailored to readiness to change are likely to be most successful.

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POS1-58
HELPING SMOKING FATHERS WITH AN INFANT TO QUIT: THE FAMILY-BASED INTERVENTION IMPACT ON MATERNAL SATISFACTION AND PARTNER SUPPORT TO QUIT
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BACKGROUND AND OBJECTIVES: Nurse-led family-based smoking cessation intervention supported mothers to help smoking fathers quit. We examined if a family-based smoking cessation intervention (1) improved marital relationship; (2) increased non-smoking partner’s support. We also tested if change on marital satisfaction and partner support influenced the smoking fathers’ abstinence. METHODS: 1,158 smoking fathers with non-smoking wives and infants who participated in a randomized controlled trial was randomized to (1) a nurse-led family-based smoking cessation intervention including individual and family counseling, or (2) a self-help education pamphlet about smoking cessation and establishing a smoke-free home. The ENRICH marital satisfaction and the Partner Interaction Questionnaire (PIQ) were used to assess marital satisfaction and partners’ behavior to help fathers, respectively, at baseline and 12-month follow-up. Generalized linear model was used to test if the changes in these scales were different between the RCT groups. Multivariate logistic regression was used to examine the association between these scales and fathers’ abstinence. FINDINGS: At 12-month follow-up, there was a greater reduction in mothers’ negative behaviors including criticism, suspicious on his ability to quit and negative expressions on smoking in the intervention group than control (F=4.02, p=0.04). Marital satisfaction significantly increased in both RCT groups, but no difference between them was found (F=0.52, p=0.47). After adjusting for treatment group and baseline smoking characteristics, increase in mothers’ marital satisfaction (Adjusted odds ratio (AOR) = 1.03, 95% CI 1.01-1.05) and decrease in negative behaviors in supporting fathers’ quitting (AOR = 0.96, 95% CI 0.93-0.98) were associated with more fathers’ self-reported abstinence. CONCLUSIONS: The family-based intervention did not affect marital satisfaction, and it was effective in reducing mothers’ negative behaviors in supporting fathers’ quitting and hence increased fathers’ abstinence.

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POS1-59
REDUCED EXPOSURE TO HARMFUL AND POTENTIALLY HARMFUL CONSTITUENTS AFTER 90 DAYS OF USE OF TOBACCO HEATING SYSTEM 2.2 IN JAPAN: A COMPARISON WITH CONTINUED COMBUSTIBLE CIGARETTE USE OR SMOKING ABSTINENCE
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This study is part of a clinical program to assess the Tobacco Heating System (THS), a candidate modified risk tobacco product. The objective of the study was to assess the reduction in exposure to selected harmful and potentially harmful constituents (HPhC) after 5 days of ad libitum use of THS 2.2 menthol (mTHS) in confinement and 85 days in an ambulatory setting compared to continued smoking of combustible menthol cigarettes (mCC) and smoking abstinence (SA). Biomarkers of exposure (BoExp) to sixteen HPHCs were evaluated and selected Clinical Risk Endpoints (CRE) were monitored. After 2 days of baseline (CC smoking), 160 healthy smokers, aged 23 to 65 years, were randomized to continue smoke
mCC (n=40), to switch to mTHS (n=80), or to stop smoking (n=40) for 90 days in this open-label, randomized, controlled, 3-arm parallel group study. Twenty-four hour urine and blood samples were collected to evaluate the levels of BoExp and CRE using validated analytical methods. This study was conducted in Japan according to GCP and is registered in ClinicalTrials.gov (NCT01970995). The average daily product use was stable in the mTHS arm (Baseline=13.1 mCC and Day 90=12.7 mTHS) and slightly increased in the CC arm (Baseline=12.5 mCC; Day 90=15.2 mCC) over the entire exposure period. The total nicotine exposure measured as nicotine equivalents were comparable in both arms (mTHS: mCC ratio of 104.1% [95% CI: 66.163]). The levels of BoExp, except S-BMA, were significantly reduced at Day 5 in the mTHS arm as compared to mCC, approaching results obtained in the SA arm and were sustained throughout the entire exposure period (>-9% to -94% at Day 5; -41% to -94% at Day 90). Initial shifts of monitored CREs in the direction of SA were observed. Product evaluation at Day 90 showed that the level of satisfaction for mTHS was comparable to mCC. Similarly, mTHS achieved an equally efficient suppression of urge to smoke compared to mCC. mTHS was well tolerated: mTHS showed significant, sustained reduction in exposure post-pHPCs after 90 days of mTHS use, as compared to CC, approaching levels observed upon smoking abstinence. Initial favorable shifts of monitored CREs were observed.

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POS1-61
WHAT DO SMOKERS WANT IN A SMARTPHONE-BASED CESSION APPLICATION?

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Growing use of smartphones, along with an increasing societal preference for digital communication, makes this technology an ideal method for distributing smoking cessation information and resources. Yet despite substantial interest in mobile phone technology and the development of numerous applications that purport to assist with cessation, very little is known about what features smokers believe would be most helpful in a smartphone-based cessation applications. Given these perceptions are likely to play a significant role in the uptake and reach of any interventions, research examining smoker preferences is paramount. In the current analysis, a sample of smokers (N = 81) recruited between March, 2013 and July, 2015 reported general information about their use of mobile phones and rated the perceived usefulness of various application features with the potential to aid in smoking cessation attempts. Participants were aged 18-65 years (M = 35.3, SD = 10.2) and other demographic characteristics. Results indicated an overwhelming majority (97.5%) of participants had a mobile phone, with a substantial majority (74.7%) having a smartphone. Not surprisingly, the highest rates of smartphone usage were among younger participants (OR = 1.06, p = .038) and lighter smokers (OR = 1.06, p = .043). However, only 8.6% had previous experience with smartphone based cessation applications. The two features rated as most useful related to gain-framed messaging (e.g. “Tell me how my health is improving…”). “Tell me how much money I saved...”) were not generally perceived as helpful, particularly among those with higher educational attainment (F = 6.18, p = .015). Social features (e.g. “Connect me to a social network of smokers trying to quit.” “Send information to my social media about my progress in quitting”) were rated as the least likely to be helpful, though younger smokers found these features more appealing than older smokers (p < .05). These results help to identify treatment approaches likely to have the greatest reach and acceptability to smokers.

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POS1-60
PROGESTERONE & POSTPARTUM DEPRESSION ON SMOKING RELAPSE

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INTRODUCTION: Research has shown that almost 85% of all women who quit smoking during pregnancy relapse within the first 6 months postpartum. Those with postpartum depressive symptoms are nearly twice as likely to relapse compared to those without. Since this time period is associated with extreme hormonal changes, sex hormones (i.e., progesterone) may play a role. This study seeks to determine if taking exogenous progesterone during the first 4 weeks postpartum helps to lessen depressive symptoms, in turn, providing further insight into preventing postpartum smoking relapse. METHODS: At enrollment, participants were 18-35 y/o, in stable mental health with a low-risk pregnancy (32-35 weeks gestation), tobacco-free for 4 weeks and motivated to remain abstinent postpartum. Participants were randomized to receive either progesterone (200mg 2x/day) or placebo for 4 weeks beginning 4 days postpartum. They completed the Edinburgh Postnatal Depression Scale (EPDS) at 5 different time points (4 days postpartum, 2 weeks, 4 weeks, 8 weeks, and 12 weeks) and were followed for smoking relapse. Mean EPDS scores were calculated for both groups and ANCOVA models were used to assess differences. A paired t-test was also run to assess overall change in EPDS scores from 4 days postpartum to 12 weeks, regardless of randomization assignment. RESULTS: Participants (n=46) were 26.5 (± 5.2) years of age, mostly white/Caucasian (62%), with at least some college education (83%). Results indicated that EPDS scores, regardless of randomization assignment, significantly decreased by 1.8 (±4.1) from 4 days postpartum to 12 weeks (p=0.0118). Mean EPDS scores in the treatment group were consistently lower at each of the 5 time points, however, these differences were not statistically significant (p=0.17, 0.60, 0.63, 0.19, 0.73; respectively). DISCUSSION: Participants in this study all experienced a decrease in depressive symptoms during the postpartum period, regardless of randomization assignment. Further research is needed, however, to explore this relationship within a large cohort of women at exceptionally high risk of developing postpartum depression and to examine how this phenomenon may relate to smoking relapse.

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POS1-62
BARRIERS TO SMOKING CESSATION EFFORTS IN PRIMARY CARE: MENTAL HEALTH PROBLEMS, OTHER SUBSTANCE USE, CHRONIC PAIN, AND DISABILITY

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BACKGROUND: Tobacco smoking contributes to poor health outcomes and primary care providers routinely recommend cessation and provide assistance to their patients who smoke. These efforts are more successful with some patients than others, and may be linked to smoking comorbidities. OBJECTIVE: To identify factors that predict lack of smoking cessation success in primary care, with particular attention to known comorbidities of smoking. METHODS: The sample contained 578 primary care patients (56% male, 89% Caucasian, 53% government or no medical insurance, average age 39 years), 73 (12.6%) who were recent quitters, and 505 who continued to smoke. Medical charts were reviewed for current medical diagnoses. Successful quitters differed in many ways from continued smokers, with significantly lower rates of depression (19.2% vs 38.0%, p = .038), alcohol dependence (8.2% vs 16.8%, p = .083), illicit drug dependence (1.4% vs 6.4%, p = .045), chronic pain diagnosis (32.9% vs 50.0%, p = .006), and being disabled and unable to work (9.6% vs 24.2%, p = .005). Of the set, depression (OR=1.95, CI=1.03-3.68) and disability status (OR=2.39, CI=1.04-5.50) were the strongest predictors of continuing to smoke in logistic models. In addition, of those with at least one identified risk factor, only 8.6% had been able to quit smoking, compared to 22.5% of those with none of the risk factors (p<21.0, p<.001). CONCLUSIONS: Mental health, other substance use, pain conditions, and disability status are associated with continued smoking, and should be considered and addressed as part of efforts to successfully intervene with smokers in primary care settings.
SMOKING BEHAVIOUR AND SENSATIONS DURING THE PRE-QUIT PERIOD OF AN EXERCISE-AIDED SMOKING CESSATION INTERVENTION

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A number of studies have observed a reduction in cigarette consumption during the pre-quit period of exercise-aided smoking cessation interventions (Leeranurayub et al., 2010; Maddison et al., 2014; Taylor et al., 2014). What remains to be elucidated is whether (a) similar changes can be seen in smoking topography and sensory experiences and (b) decreases in quantity of cigarettes smoked is associated with changes in smoking topography and sensation. This study sought to address these gaps in the literature in order to provide evidence for compensational smoking or the incompatible nature of smoking and exercise. Female smokers (N = 236, M age = 43, FTCD = 5.3, M cigarettes/day = 17.0) enrolled in an exercise-aided smoking cessation intervention self-reported daily cigarette use and provided breath carbon monoxide and smoking topography (CRESS Pocket) data at baseline, week 1, and week 3. Participants self-administered the modified Cigarette Evaluation Questionnaire on a daily basis, immediately after the first cigarette of the day, during the period leading up to the targeted quit date, which was set for the beginning of week 4. Prior to the quit date, cigarette consumption (p = 0.00, etα =0.32), carbon monoxide (p = 0.00, etα =0.14), puff duration (p = 0.01, etα =0.05), smoking satisfaction (p = 0.00, etα = 0.34), psychological reward (p = 0.00, etα = 0.43), enjoyment of respiratory tract sensations (p = 0.00, etα = 0.29), and craving (p = 0.00, etα = 0.38) decreased, whereas average puff flow (p = 0.01, etα =0.05) increased. There were no significant relationships between cigarette consumption and smoking topography and these variables were marginally associated with sensations. This is the first study to establish that regular exercise served as a conduit for facilitating behavioural and sensory harm reduction with cigarettes. The lack of association between cigarette consumption and smoking topography suggests that compensation (i.e., smoking fewer cigarettes but more aggressively) is not an issue. Taken together, these data imply that female smokers who exercise prior to making a quit attempt are in a favourable state to achieve smoking cessation.

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THE EFFECT OF SEVERITY OF SELF-REPORTED ANHEDONIA ON SMOKING CESSATION SUCCESS AT 6-MONTHS

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Recent research findings suggest that anhedonia, the inability to experience pleasure, is associated with poor smoking cessation outcomes. The aim of this secondary analysis was to determine whether the severity of self-reported anhedonia was associated with smoking cessation success. We hypothesized that there would be a negative correlation between severity of anhedonia and smoking cessation at 6-month follow-up. Adult cigarette smokers (n=18389) enrolled in a smoking cessation program in their primary care clinic between January 2014 and February 2015 and received up to 26 weeks of brief behavioral counseling and nicotine replacement therapy at no cost. A single-item question was used to assess anhedonia at baseline "Over the last 2 weeks, how often have you been bothered by little interest or pleasure in doing things". Abstinence was assessed as 7-day point prevalence abstinence (7-dayPPA) at the 6 month follow-up. Of the 54.9% (n=10100) who reported no anhedonia had a 7-dayPPA of 38.4%, compared to 34.2% of those reporting 'several days' of anhedonia (22.3%, n=4107), and 27.2% in those reporting anhedonia on 'More than half the days' (7.5%, n=1379). Surprisingly those who reported anhedonia 'Nearly every day' (6.6%; n=1198) had a 7-dayPPA of 32.7% and were more likely to have successfully quit compared to those who reported 'More than half the days' (p=0.038). Compared to participants who reported no anhedonia, those who reported symptoms 'Several days' were 17% less likely to quit (OR=.831, p<.001, 95% CI 0.74-0.93); those who reported symptoms 'More than half the days' were 40% less likely to quit (OR=.597, p<.001, 95% CI 0.5-0.72) and those who reported symptoms 'Nearly every day' were 22% less likely to quit (OR=.78, p=.012, 95% CI 0.64-0.95). The association between severity of anhedonia and quitting outcomes was not completely linear as hypothesized. It is not clear why those who reported anhedonia symptoms almost daily had better quit outcomes than those reporting anhedonia 'more than half the days'. Further analysis will be presented examining potential confounders such as anti-depressant use on these findings.

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THE ROLE OF SOCIAL ANXIETY IN THE ACCEPTANCE OF INTERNAL SMOKING CUES

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BACKGROUND: One third (14 million) of all smokers have social anxiety disorder (SAD). Smokers with social anxiety are significantly less likely to quit smoking than...
smokers without social anxiety. Despite the importance of this subgroup of smokers, little is known about their unique barriers to quitting, as they have historically been neglected in the literature. Accordingly, in a sample of treatment-seeking smokers, the current study examined the unique role of social anxiety in two psychological constructs that are highly predictive of smoking cessation: (1) commitment to quitting and (2) acceptance of thoughts, sensations, and emotions that serve as cues to smoke. METHODS: Participants (N=450) were adult smokers (52.7% female) from a group-based randomized controlled trial for smoking cessation. Categorical and linear regression models examined the baseline relationships between levels of social anxiety and indices of commitment to quitting (CQS) and acceptance of thoughts, sensations, and emotions that serve as cues to smoke (AIS). RESULTS: Social anxiety was moderately associated with lower levels of acceptance of thoughts, sensations, and emotions that cue smoking (Pearson’s r = -.24 to -.16, p < .01), but was not associated with commitment to quitting (Pearson’s r = -.04, p > .05). After controlling for nicotine dependence, depression, generalized anxiety, PTSD, and panic disorder, social anxiety still explained unique variability in overall acceptance of internal smoking cues (Beta = -.133, p < .05) and in acceptance of sensations and emotions that serve as smoking cues (Betas = -.113 and -.122, p < .05). Social anxiety no longer explained unique variability in acceptance of thoughts that trigger smoking (Beta = -.076, p > .05). CONCLUSIONS: Smokers with high levels of social anxiety may not be accepting of (i.e., are avoidant of) internal cues to smoke—especially physical sensations (e.g., urges) and emotions. This avoidance may help explain why smokers with social anxiety are less likely to quit. Smokers with social anxiety may be well-suited to smoking cessation treatments that directly cultivate greater acceptance of these experiences.

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POS1-68 MENTHOL CIGARETTE SMOKING DOES NOT MODERATE THE EFFECT OF FAST NICOTINE METABOLISM ON SHORT-TERM SMOKING CESSATION DURING NICOTINE REPLACEMENT THERAPY

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Faster nicotine metabolism ratio (NMR) and menthol cigarette use are each linked with difficulty quitting. However, basic animal and human research suggests that menthol slows NMR, which should attenuate its effect on abstinence. This study tested whether menthol cigarette use influences the association between fast NMR and short-term abstinence after 8 weeks of treatment with 21 mg/day nicotine patch and behavior counseling. We hypothesized that cigarette type (menthol vs. non-menthol) would modify this association (i.e., menthol use would mitigate the effect of fast NMR on smoking cessation). Smokers with high levels of social anxiety may not be accepting of (i.e., are avoidant of) internal cues to smoke—especially physical sensations (e.g., urges) and emotions. This avoidance may help explain why smokers with social anxiety are less likely to quit. Smokers with social anxiety may be well-suited to smoking cessation treatments that directly cultivate greater acceptance of these experiences.

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POS1-70 PHYSICAL AND SOCIAL ENVIRONMENTAL FACTORS AND THEIR ASSOCIATION WITH QUITTING BEHAVIOURS AMONG SMOKERS WITH A MENTAL ILLNESS

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BACKGROUND: A lesser likelihood of successfully quitting contributes to the markedly higher prevalence of smoking which persists among people with a mental illness, internationally. Sociocultural theories highlight the potential influence of physical and social environmental factors on health behaviour, including tobacco use and cessation. A paucity of research exploring even the prevalence of physical and social environmental factors relevant to quitting as well as their possible impact on cessation attempts, exists for smokers with a mental illness. The prevalence of a variety of relevant physical and social environmental factors, and associations of such factors with recent quitting behaviours is reported.

METHODS: A cross sectional survey was undertaken of smokers admitted across four adult psychiatric inpatient facilities within one local health district in New South

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POS1-69 EVIDENCE OF GENDER DIFFERENCES IN HOW BRIEF ALCOHOL SCREENING AND INTERVENTION FOR COLLEGE STUDENTS (BASICS) INFLUENCES SMOKING

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Cigarette smoking among college students poses significant health and social problems. Although smoking rates among U.S. adults have steadily declined in recent years, smoking prevalence rates among college students remain concerning, with 21% of students reporting cigarette use (SAMSHA, 2014). This trend is disconcerting because historically, education (i.e., years) has been inversely correlated with cigarette smoking (CDC, 2004). Because college student smoking is so highly associated with drinking, it is possible that brief motivational interventions (BMIs) such as the Brief Alcohol Screening and Intervention for College Students (BASICS) may be a way to simultaneously target and influence cigarette use among college students in addition to their alcohol use. BMIs have been found to be efficacious in reducing college student alcohol consumption and alcohol-related problems. In particular, BASICS has shown highly promising results in reducing drinking and drinking-related problems in both voluntary and treatment-mandated college students (Larimer & Cronce, 2002; 2007; Terlecki, Larimer, & Copeland, 2010). In the present study, college student problem drinkers (N = 132) were randomly assigned to receive BASICS or to undergo an assessment only wait-list control condition. Chi-square analyses and analyses of variance (ANOVA) determined that groups were comparable at the baseline assessment session on cigarettes smoked per day (CPD) in the previous week, positive endorsement of viewing oneself as a social smoker, and if self-identified as a social smoker, they smoked more when drinking alcohol and vice versa than when not drinking and smoking at the same time. Social smoking was endorsed overall at a rate of 23% at baseline/pre-treatment. However, at 4 weeks follow-up, a gender by treatment interaction was detected (F(1,127) = 4.61, p = .03) whereby males receiving BASICS significantly reduced their smoking (M = 0.27 CPD) compared to controls (M = 2.70 CPD), but females receiving BASICS did not decrease their smoking (M = 2.23 CPD) compared to controls (M = 0.29 CPD). These findings will be interpreted in the context of gender differences identified with respect to alcohol use outcomes in BMIs and studies implementing BASICS in particular.

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Wales, Australia. Chi Square and multivariate logistic regression analyses were used to explore associations between physical and social environmental factors and recent quitting behaviour. RESULTS: Thirty two per cent of participants lived in a house where smoking was permitted inside. 44% lived with other smokers. The majority of participants believed family and friends, and relevant mental health professionals would be supportive of a quit attempt. Participants not residing with other smokers and those who perceived their psychiatrist to be supportive of a quit attempt were significantly more likely to have quit for longer durations or on a greater number of instants composition from last six months. CONCLUSIONS: Aspects of the physical and social environment may have a role in smoking cessation interventions for persons with mental illness. Environmental structures that are pertinent for interventions for smokers generally appear to also be relevant for this group. Knowing our findings suggest there may be unique factors to consider for persons with a mental illness, including provision of smoking cessation support from psychiatrists.

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POS1-71
MAINSTREAM SMOKE COMPOSITION OF CIGARILLOS AND LITTLE CIGARS FROM REPLICTED HUMAN SMOKING
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In spite of dramatic increases in sales of small cigars, there have been few studies of smoking and toxicant exposure after smoking little cigars and cigarillos. This study compared mainstream smoke composition from Winchester Little Cigars, WLC, (n=21) and Black & Mild Cigarillos, BMC, (n=23) used by people who ordinarily smoke cigarettes and cigar products (dual users). Puff by puff recordings from human smoking were subsequently used to drive a linear smoke machine that replicated puff by puff smoking. Semi-volatile and volatile components of mainstream smoke were collected and analyzed according to standardized and validated methods. Mainstream components were analyzed as a function of the smoking article and were normalized as a function of puff volume (per 1000 mL) or weight of tobacco consumed. Average unadjusted yields from WLC and BMC respectively were: acetaldehyde (1568, 3613 ug), acetonitrile (400, 1044 ug), acrylonitrile (37, 61 ug), Ba(a)P18, 74 ng), benzene (119, 321 ug); 1.3 butadiene (110.272 ug), 2, 5 dimethylfuran (16, 324 ug); nicotine (1.8, 2.3 mg) NNK (331, 675 ng) and NNN (485, 636 ng). The yield was larger for the BMC because the article itself and the amount of tobacco consumed was about twice the WLC. Yields from WLC were generally similar to those of 5 US domestic cigarettes (Newport menthol king size and 100s; Marlboro Gold and Red, American Spirit). Levels of 2, 5 dimethylfuran, a marker of cigar smoke, were substantially elevated in the BMC above WLC and cigarettes. These data indicate that toxicants from cigar products are qualitatively similar to cigarette smoke. The size of the article and the characteristics of the consumption are important individual determinants in overall exposure especially in the consideration of exposures from cigars that typically are not consumed in a single smoking session.

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POS1-72
DOES USER ELECTRONIC CIGARETTE EXPERIENCE INFLUENCE THE NICOTINE DELIVERY PROFILE OF ELECTRONIC CIGARETTES?

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BACKGROUND: Electronic cigarettes (ECIGs) use a heating element to aerosolize a solution that often contains nicotine. The extent to which ECIG experience produces differences in user plasma nicotine concentration across a range of ECIG liquid nicotine concentrations has not been explored systematically. The purpose of this clinical laboratory study was to examine this issue. METHODS: Nineteen ECIG-experienced users and 21 ECIG-naive cigarette smokers used an "eGo" ECIG battery (3.3 V; 1000mAh) attached to a 1.5 Ohm dual-coil cartomizer loaded with 1 ml of a flavored (tobacco or menthol) 70% propylene glycol / 30% vegetable glycerin liquid in four independent laboratory sessions that differed by the nicotine concentration placed in the cartomizer (0, 8, 18, or 36 mg/mL). In each session, participants used the ECIG in two 10-puff sessions separated by 60 minutes. Blood was sampled regularly for later analysis of plasma nicotine concentration and puff topography was measured during each bout. RESULTS: Immediately after bout 1, mean plasma nicotine concentrations were significantly higher (p<0.05) for the 8, 18, and 36 mg/mL concentrations compared to the 0 mg/mL for both groups. For the 8 mg/mL condition, mean (SD) plasma nicotine concentration for ECIG-experienced users was 16.2 ng/mL (14.3) vs. 8.0 ng/mL (5.7) for ECIG-naive users (p<0.05). For the 18 mg/mL condition, mean plasma nicotine concentration for ECIG-experienced users was 23.6 ng/mL (17.6) vs. 11.3 ng/mL (11.9) for ECIG-naive users (p<0.05). For the 36 mg/mL condition, mean plasma nicotine concentration for ECIG-experienced users was 28.8 ng/mL (20.8) vs. 15.2 ng/mL (15.9) for ECIG-naive users (p<0.05). A similar pattern was observed for bout 2 for both groups. For topography, ECIG-experienced users took larger and longer puffs. CONCLUSIONS: ECIGs effective nicotine delivery can depend upon user experience across a range of liquid nicotine concentrations, with experienced ECIG users receiving more nicotine relative to naive users, likely a result of taking larger and longer puffs. Understanding factors that influence ECIG nicotine delivery is critical for effective ECIG regulation.

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POS1-73
VARENICLINE-INDUCED ELEVATION OF DOPAMINE IN SMOOKERS: A PRELIMINARY [11C]-(+)-PHNO PET STUDY

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Varenicline, a nicotinic partial agonist, may produce its therapeutic efficacy in smoking cessation by elevating dopamine (DA) in the human brain during periods when smokers are abstinent and may crave cigarettes due to withdrawal-induced negative affect. However, no study has explored this in human participants and the preclinical literature is unclear as to the ability of varenicline to elevate DA levels. [11C]-(+)-PHNO ([11C]-(+)-4-propyl-3,4,4a,6,10b-hexahydro-2H-naphth[o] [2,1-b][1,4]oxazin-9-0) is a positron emission tomography (PET) radiotracer that allows for the detection of changes in DA levels in the human brain with good sensitivity, and changes in binding of [11C]-(+)-PHNO have been used to detect elevations of DA induced by smoking. Here, we used PET with [11C]-(+)-PHNO to explore the impact of varenicline on binding, and DA levels, in the D2-rich striatum and D3-rich extra-striatal regions and its relationship with craving, withdrawal and smoking behavior. Eleven treatment-seeking smokers underwent two PET scans with [11C]-(+)-PHNO each following 12 hr overnight smoking abstinence (i.e. under abstinence conditions) both prior to receiving varenicline and following 10-11 days of varenicline treatment (i.e. at steady state drug levels). Subjective measures of craving and urges to smoke were also assessed on the days of the PET scans. Varenicline treatment significantly reduced [11C]-(+)-PHNO binding in the dorsal caudate and some craving measures. These findings provide evidence that varenicline is able to increase DA levels in the human brain, a factor that may contribute to its therapeutic efficacy.

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POS1-74
CHARACTERIZING SMOKING TOPOGRAPHY IN RESPONSE TO SMOKING REDUCED NICOTINE CONTENT RESEARCH CIGARETTES

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Previous research has shown that smokers of conventional low nicotine yield cigarettes may compensate their smoking behavior by puffing more intensely. It is unknown if smoking behavior changes when smoking reduced nicotine content (RNC) research cigarettes. A double-blind, parallel, randomized clinical trial was conducted June 2013 -- July 2014 at ten US sites to examine addictiveness and toxicant exposure of RNC research cigarettes. Eligibility criteria included age ≥18 years, ≥2 yrs of smoking per day, and interest in quitting smoking. Participants were randomized to smoke for 6 weeks either their usual brand or one of six investigational RNC cigarettes, provided for free, that varied in nicotine content: 15.8, 5.2, 2.4, 1.3, 0.4 mg/g tobacco, and a 0.4 mg/g nicotine/high tar version. Daily cigarette consumption was measured as the primary measure of smoking behavior. Smoking topography was assessed by smoking a single cigarette in the laboratory at baseline (own brand cigarette), and after 2 and 6 weeks of RNC use. Analyses were conducted to examine differences between own brand and RNC assignment as well as between week 2 and week 6.762 individuals provided useable smoking topography data. Overall, there was a significant decrease in total puff volume between own brand (baseline) and RNC cigarette smoking (p<0.01). All RNC cigarette groups had a decrease in total puff volume at week 2 compared to baseline: ranging from a 10% decrease for the highest RNC cigarette (15.8mg/g); 13-15% decrease relative to baseline for the 5.2mg/g, 2.4mg/g, and 1.3mg/g RNC cigarettes; and a 24% and 34% decrease for the 0.4mg/g and 0.4mg/g (high tar) RNC groups, respectively. There were no significant differences in total puff volume within the RNC groups between week 2 and week 6 assessments (p > .3). Other measures of smoking topography followed a similar trend. Unlike conventional low-yield cigarettes, compensatory smoking behavior did not occur when participants were randomized to RNC cigarettes. Results suggest a decrease in smoking topography could be expected when switching to RNC cigarettes, and smoking behavior stabilizes after 2 weeks of RNC cigarette use.

POS1-76
ELECTRONIC CIGARETTE VAPING TOPOGRAPHY AND NICOTINE INTAKE DURING AD LIBITUM ACCESS

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OBJECTIVE: To characterize vaping topography and nicotine intake during a period of ad libitum (ad lib) access among experienced users of electronic cigarettes (e-cigs). METHODS: Thirteen healthy adult e-cig users completed a 1-day inpatient study. After overnight abstinence and a 15 puff e-cig session (data not presented here), there was 4 hours of abstinence followed by 90 minutes of ad lib use of their usual e-cig. The ad lib session was videotaped. Blood samples were collected before and every 15 minutes after the session began. Subjective effects were assessed before and after the session. RESULTS: The majority of participants (8 of 13) used tank devices (2 used cig-a-like; 3 used rebuildable atomizers). On average, 84 puffs (SD= 38, range 10-123) were taken and the average puff duration was 3.5 seconds (SD= 1.4). Participants used an average of 545 mg (SD= 641 mg) of the usual e-liquid, which delivered 4.0 mg (SD= 3.3 mg, range 0.4-12) of nicotine. The average maximum plasma nicotine concentration was 12.8 mg/mL (range 1.6-29.7 mg/mL) at 72 minutes (range 15-90 mins) after the ad lib session began. For all subjects, number of puffs, total puffing time, and average puff duration were not significantly correlated with amount of nicotine delivered or other PK parameters. However, among the 8 tank users, number of puffs was significantly correlated with amount of nicotine delivered (r=0.74, p=0.04), Cmax (r=0.77, p=0.02), and AUC0à90 min (r=0.85, p=0.008). Nicotine delivered was significantly correlated with Cmax (r=0.93, p<0.001) and AUC (r=0.92, p<0.001). Withdrawal and urge to vape decreased and the e-cigs were described as satisfying. Conclusion: During 90 minutes of ad lib access, experienced e-cig users took in, on average, as much nicotine as 3-4 typical tobacco cigarettes. The average plasma nicotine levels were similar to reported nicotine boosts from smoking one tobacco cigarette, consistent with the intermittent dosing of nicotine from e-cigs compared to the more nearly bolus dosing from a cigarette. Differences in pattern of delivery and peak levels of nicotine achieved could influence the addictiveness of e-cigs compared to conventional cigarettes.

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POS1-77
HETEROGENEITY IN ACUTE NICOTINE ABSORPTION FROM ELECTRONIC AND TRADITIONAL CIGARETTES

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INTRODUCTION: No previous studies have reported blood nicotine concentrations during acute use of electronic cigarettes (i.e. within the first 5 minutes). There is a need to understand the rate of nicotine absorption in experienced e-cig users, how this varies by e-cig characteristics and compares with traditional cigarettes. This study measured acute nicotine absorption in current e-cig users using their own device and compared it with absorption in a prior laboratory study using similar methods in traditional cigarette smokers. METHODS: 14 current e-cig users (10 using advanced e-cigs with a large battery and manual button, 4 using cigalikes) completed an acute pharmacokinetic study and are compared with 9 traditional cigarette smokers. E-cig users were required to abstain from smoked tobacco for 4 days and from all sources of nicotine for 14 hours prior to the laboratory visit and required to have an exhaled baseline CO below 8 ppm. They were instructed to take a puff on their e-cig once every 20 seconds for 10 minutes (i.e. 30 puffs). Blood samples were taken at baseline and then 1, 2, 4, 6, 8, 10, 12 and 15 minutes after initiation of puffing. Procedures were similar for smokers except they were required to have a CO less than 15 ppm at baseline, were allowed to smoke ad-lib (mean duration was 5.2 minutes) and also had blood drawn at 20 minutes and beyond. Subjective effects were also recorded before, during and after product use. RESULTS: E-cig users had used for an average of 9 months and their mean nicotine concentration in the liquid was 15.9 mg/mL. E-cig use resulted in a significant reduction in craving and total withdrawal score (both p<0.04). Overall, cigarette smokers obtained a significantly larger boost in blood nicotine (16.7 ng/ ml) than e-cig users (8.2 ng/ml), and a significantly shorter time to peak (6.4 minutes versus 11.5). Whereas every cigarette smoker obtained a blood nicotine level above 10 ng/ml, only 3 e-cig users did. There was marked variability in nicotine absorption among e-cig users (boost ranged from 1 to 35 ng/ml), and cigalike users obtained a significantly lower mean boost in blood nicotine concentration than users of advanced e-cigs (1.8 v 10.8 ng/ml). CONCLUSION: While experienced users of advanced e-cigs can obtain a rate of nicotine absorption similar to that of traditional cigarettes, in this study most obtained lower absorption, and users of cigalike models appear to absorb very little nicotine, even when using a relatively aggressive puffing schedule.
INTRODUCTION

Tobacco smoking is a major public health problem, and is the leading cause of preventable premature death in the United States. Nicotine, a main psychoactive chemical contained in tobacco, is thought to produce addiction through effects on dopaminergic transmission. In rodent studies using microdialysis, nicotine administration increases extracellular dopamine concentration in the ventral striatum. Moreover, positron emission tomography (PET) has shown links between smoking-induced dopamine release and diminution of craving as well as the level of nicotine dependence in human subjects. Previous PET studies have also shown deficits in postsynaptic dopaminergic function in response to chronic cigarette smoking. In light of these prior findings and substantial evidence that a deficit in striatal dopamine function is a common feature of addictive disorders, we expected that both chronic cigarette exposure and the level of nicotine dependence would be associated with dopaminergic D2/D3 receptor availability. Twenty-one participants who were daily smokers (11 men, 10 women) were tested for dopamine D2/D3 receptor availability, indicated by binding potential (BPnd), in the limbic striatum using PET with the radiotracer [(18F]fallypride. Volumes-of-interest (VOIs) representing functional subdivisions of striatum were defined and drawn in native space on individual MRI scans. Data on smoking-related behavior, including number of cigarettes consumed per day, number of years of smoking, and nicotine dependence (Fagerström Test for Nicotine Dependence) were acquired. Limbic striatum dopamine D2/D3 BPnd was correlated with cigarettes consumed per day, pack-years and nicotine dependence. A mediation effect of D2/D3 BPnd in limbic striatum on the association between pack-years and FTND was shown. These results suggest that cigarette-smoking exposure contributes to a deficit in dopaminergic function in limbic striatum, and moreover, that this effect on dopaminergic function mediates the contribution of exposure to nicotine dependence.

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POS1-77

STRIATAL DOPAMINE D2/D3 RECEPTORS MEDIATE ASSOCIATION OF TOBACCO EXPOSURE WITH NICOTINE DEPENDENCE

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Tobacco smoking is a major public health problem, and is the leading cause of preventable premature death in the United States. Nicotine, a main psychoactive chemical contained in tobacco, is thought to produce addiction through effects on dopaminergic transmission. In rodent studies using microdialysis, nicotine administration increases extracellular dopamine concentration in the ventral striatum. Moreover, positron emission tomography (PET) has shown links between smoking-induced dopamine release and diminution of craving as well as the level of nicotine dependence in human subjects. Previous PET studies have also shown deficits in postsynaptic dopaminergic function in response to chronic cigarette smoking. In light of these prior findings and substantial evidence that a deficit in striatal dopamine function is a common feature of addictive disorders, we expected that both chronic cigarette exposure and the level of nicotine dependence would be associated with dopaminergic D2/D3 receptor availability. Twenty-one participants who were daily smokers (11 men, 10 women) were tested for dopamine D2/D3 receptor availability, indicated by binding potential (BPnd), in the limbic striatum using PET with the radiotracer [(18F]fallypride. Volumes-of-interest (VOIs) representing functional subdivisions of striatum were defined and drawn in native space on individual MRI scans. Data on smoking-related behavior, including number of cigarettes consumed per day, number of years of smoking, and nicotine dependence (Fagerström Test for Nicotine Dependence) were acquired. Limbic striatum dopamine D2/D3 BPnd was correlated with cigarettes consumed per day, pack-years and nicotine dependence. A mediation effect of D2/D3 BPnd in limbic striatum on the association between pack-years and FTND was shown. These results suggest that cigarette-smoking exposure contributes to a deficit in dopaminergic function in limbic striatum, and moreover, that this effect on dopaminergic function mediates the contribution of exposure to nicotine dependence.

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POS1-78

BEHAVIOURAL INTERVENTIONS AS ADJUNCTS TO PHARMACOTHERAPY FOR SMOKING CESSATION

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INTRODUCTION: Pharmacotherapies and behavioural counselling have independently been shown to aid in quitting smoking. This updated Cochrane Systematic Review aimed to determine if there is an additional benefit from behavioural support for people already using smoking cessation medications. METHODS: We searched the Cochrane Tobacco Addiction Group Register for randomised controlled trials evaluating the addition of personal support to pharmacotherapy. We extracted data on the relative rates of smoking cessation, defined as six months of abstinence. We excluded trials recruiting only pregnant women or adolescents, and trials with less than six months follow-up. Search results were pre-screened by one author and inclusion of relative trials was agreed by two. Data were extracted by one author and checked by another. RESULTS: Our search in May 2015 retrieved 2940 records of which we included 47 studies with over 18,000 participants. A pooled meta-analysis was performed with little resulting evidence of statistical heterogeneity. (I² = 18%). Evidence indicated that more intensive behavioural support provides a small but statistically significant benefit for abstinence (RR 1.17, 95% CI 1.11 to 1.24). A small number of trials were judged to be at high risk of bias on one or more domain, but findings were not sensitive to their exclusion; hence the quality of the evidence was judged to be high using the GRADE approach. CONCLUSIONS: When this review was first conducted in 2013, the smaller than expected relative risk of 1.16 (1.09-1.24), left us unsure as to whether there was an unexplained reason for this low effect size, especially given the independent benefits of the two therapies. With an additional 10 studies and a 25% increase in participants, this updated review finds greater certainty that the additional benefit is in fact marginal. While the number needed to treat was 30, given the high mortality and morbidity attributed to smoking, there is merit to adjunct support. Knowing this treatment magnitude with such certainty, can aid practitioners when deciding to allocate time and resources to behavioural therapy.

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POS1-79

ASSOCIATION OF WEIGHT CONCERNS WITH MOTIVATION TO QUIT & NICOTINE DEPENDENCY AMONG PREGNANT WOMEN SMOKERS

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INTRODUCTION: A major barrier to smoking cessation among the female population is weight concerns. During pregnancy, there is an overall increase in motivation to quit, however studies have shown weight concerns among pregnant women to be associated with certain smoking symptomatology. However, no studies to our knowledge have investigated weight concerns during pregnancy with motivation to quit and dependency among pregnant smokers. METHODS: In this secondary analysis, participants were pregnant women 18-35 years old, smoked ≥5 cpd for at least one year, were in stable health in their 2nd or 3rd trimester of pregnancy. Ad lib smoking participants attended a screening visit for the parent study where they completed questionnaires assessing their motivation to quit, weight concerns, withdrawal symptoms (MNWS), smoking urges (Brief QSU), and dependency (FTND). Pearson correlation coefficients were calculated using SAS Version 9.3 software to assess the relationship between weight concerns and motivation to quit smoking among this cohort. RESULTS: Participants (n=96) were an average of 25.3 years of age, mostly identified as white (63.5%) and the majority reported a 25% increase in participants, this updated review finds greater certainty that the additional benefit is in fact marginal. While the number needed to treat was 30, given the high mortality and morbidity attributed to smoking, there is merit to adjunct support. Knowing this treatment magnitude with such certainty, can aid practitioners when deciding to allocate time and resources to behavioural therapy.

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POS1-80
ADHD, SMOKING WITHDRAWAL AND INHIBITORY CONTROL:
RESULTS OF A FMRI STUDY WITH METHYLPHENIDATE
CHALLENGE
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Smoking withdrawal has negative effects on inhibitory control and these effects have been shown to be greater for smokers with pre-existing attention problems, including individuals with ADHD. The current research was designed to evaluate changes in inhibitory control-related brain activation among abstinent smokers with ADHD. Moreover, we sought to investigate the role of dopaminergic neurotransmission in these changes by examining the effects of a pro-dopaminergic drug (i.e. 40 mg methylphenidate; MPH) on brain and behavior. Adult daily smokers with (n=17) and without (n=20) ADHD were fMRI scanned under three conditions: (a) smoking as usual + placebo; (b) 24 hr smoking abstinence + placebo and (c) 24 hr smoking abstinence + MPH. Order of scans was randomized and counterbalanced. Design: within-subjects condition by condition of the Go/No-Go task that allows for an assessment of sustained inhibitory control. Analysis of inhibitory control performance identified a trend for a main effect of condition on inhibitory control, t(36)=2.98, p=0.057 due to methylphenidate-induced improvements in performance across groups. In the ADHD group specifically, MPH significantly improved inhibitory control during abstinence, t(23)=2.2, p=0.046. Voxel-wise analysis of task-related BOLD signal identified a cluster in occipital cortex (peak voxel: x=28, y=-88, z=26; p<0.01, k=28). In this cluster, abstinence-induced decreases in activation observed among ADHD smokers were reversed by methylphenidate. Correlations between inhibitory control and occipital cortex activations across groups and conditions, r=-0.35, p<0.01, suggest that abstinence and MPH-induced changes in visual attention areas may be responsible for abstinence-induced deficits in inhibitory control. Additional supporting data and implications for the treatment of withdrawal-associated cognitive deficits will be discussed.

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POS1-81
CIGARETTE PURCHASE TASK: IDENTIFYING QUIT SUCCESS IN PREGNANT CIGARETTE SMOKERS
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INTRODUCTION: Maternal cigarette smoking is a major risk factor for adverse birth outcomes. Thus, promoting smoking cessation among pregnant women is critical. Measures that identify women who are less likely to quit during pregnancy may allow for successful tailoring of smoking-cessation treatments. The present study represents an initial examination of whether the Cigarette Purchase Task (CPT) may be sensitive to individual differences in the likelihood that pregnant smokers will successfully quit during formal smoking-cessation treatment. The CPT uses hypothetical choices regarding consumption of cigarettes at varying prices (demand curves) to assess dimensions of cigarette-related reinforcement. METHODS: Participants were 56 pregnant cigarette smokers enrolled in an ongoing smoking-cessation trial comparing usual care alone versus usual care plus voucher-based financial incentives. All women completed the CPT at study intake. Non-parametric Kruskal-Wallis tests were used to ensure there were no differences in baseline CPT indices across treatment groups. Two-way ANOVAs were used to compare differences in CPT indices as a function of biochemically verified late-pregnancy smoking status. RESULTS: Baseline Intensity of Demand (# cigs smoked/day if cigs were free) differed significantly between late-pregnancy quitters and smokers (F (4,45)=5.21, p=0.03) even after controlling for the influence of treatment condition. Other CPT reinforcement indices did not differ between quitters and smokers. CONCLUSION: These initial results suggest that the CPT may allow for prospective identification of women who may need additional supports to quit smoking. Such early identification procedures may help to increase the success of cessation treatments in this vulnerable population, including efficacious incentive-based interventions.

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POS1-82
PRIMARY CARE PHYSICIANS' BELIEFS AND PRACTICES REGARDING E-CIGARETTE USE BY PATIENTS WHO SMOKE: A QUALITATIVE ASSESSMENT
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BACKGROUND: There is growing evidence that e-cigarettes are being discussed and recommended during physician office visits. Factors underlying these conversations and physician recommendations regarding e-cigarette use remain unknown. OBJECTIVE: To explore primary care physicians' (PCPs') beliefs and practices about e-cigarettes. DESIGN: Cross-sectional, semi-structured interviews with PCPs in 2014 were conducted and audio-recorded. Study Population: Participants were 15 general internal medicine and family practice physicians practicing in two settings in Virginia, USA. Coding and Analysis: Interview recordings were transcribed, and the content analyzed using the constant comparative method to identify key themes regarding PCPs' reported current practices and beliefs. RESULTS: Five themes were identified: PCPs report 1) noncombustible tobacco products (such as e-cigarettes) receive little proactive screening attention within existing clinic processes, 2) patients commonly initiate e-cigarette discussions, and 3) a lack of knowledge regarding the potential harms and benefits of e-cigarettes, 4) believing e-cigarettes are a safer alternative to smoking combustible tobacco products, and 5) abandoning concerns regarding the potential harms of e-cigarettes in the context of highly addicted patients and those with extensive comorbidities. Limitations: Physician practices and beliefs are reported from two primary care practices and ability to generalize study findings may be limited. CONCLUSIONS: Despite acknowledging limited knowledge regarding e-cigarettes, findings suggest that some primary care physicians are currently recommending e-cigarettes to their patients for smoking cessation and relative harm reduction, often personalizing recommendation based on the patient's perceived level of addiction and current health status. Physicians need to be informed about the evolving evidence regarding the risks and benefits of e-cigarettes to be able to competently steer e-cigarettes-related discussions with their patients.

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POS1-83
PREDICTING CIGARETTE USE IN ADOLESCENCE USING MACHINE LEARNING TECHNIQUES ON MULTIMODAL BRAIN AND PSYCHOMETRIC DATA
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INTRODUCTION: The initiation of cigarette use during adolescence may be driven by a complex profile of biological, behavioral and environmental measures. However, identifying generalizable predictors of future use is often compromised due to overfitting regression models in studies with low sample size or a lack of replication. Furthermore, the use of cigarette-naive and future-smokers (N=1094), we applied ten-fold cross-validated logistic regression with elastic-net regularization to brain and psychometric data to generate models that predict future cigarette use. The predictive value of the model was assessed using an ROC curve, employing the area under the curve (AUC) as an index of the ability of a model to predict future smoking or quit status. RESULTS: Subjects were drawn from the IMAGEN project (http://www.imagen-europe.com). Analyses were based on data obtained at age 14 prior to any regular cigarette use. Subjects who smoked more than 20 cigarettes by age 16 were classified as future-smokers (n=174). We then identified a group of controls who never smoked at age 14 or 16 (n=920). A large number of multimodal predictors were used in the analysis, including structural and functional neuroimaging, various psychometric predictors, and candidate SNPs. RESULTS: The final models returned an AUC=0.73, indicating relatively high predictive ability. Nine predictors were found in all ten folds, and included various stressful life-event and personality measures, as well as lifetime alcohol use and age. We then reran the
analysis using only the neuroimaging data to identify the neurobiological predictors of future cigarette use. These analyses returned an AUC=0.63 and identified numerous functional and structural brain measures that predict future cigarette use.

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**POS1-84**

**BIOLOGICAL AND AFFECTIVE MECHANISMS THROUGH WHICH ACUTE EXERCISE ATTENUATES CIGARETTE CRAVINGS**

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A large body of recent evidence has converged to support the acute craving relief delivered by a bout of exercise among temporarily abstinent smokers (Haasova et al., 2013; Haasova et al., 2014; Roberts, et al., 2012). A number of cognitive, biological, and affective mechanisms have been proposed to explain how exercise attenuates cravings; however, research has presented mixed ﬁndings. Elucidating the mechanisms behind the therapeutic effects of acute exercise is part and parcel of advancing smoking cessation strategies. The aim of this study was to further investigate the mechanistic role of cortisol and affect in the exercise-craving reduction relationship of smokers. Moderate daily smokers (n = 55, M age = 42.2, M cigarettes/day = 15.4) were asked to smoke according to a strict schedule that gradually lengthed the inter-cigarette interval. Brain activation in response to passively viewing cigarettes (p = 0.00, eta = 0.40) and negative affect (p = 0.00, eta = 0.17), as well as decreased positive affect (p = 0.00, eta = 0.08) and cortisol (trending, p = 0.07, η² = 0.04). As expected, a signiﬁcant reduction in cravings from T2 to T3 was found for MEG but not PSG (p = 0.07, η² = 0.20). Mediation was conducted using Sobel and bootstrapping tests (Preacher and Hayes, 2004) and three combinations of mean and residual change scores of potential mediators and cravings. These approach es demonstrated that both positive and negative affect, but not cortisol, mediated the relationship between exercise and cravings. Understanding the mechanisms by which exercise induces craving reductions will better allow researchers and healthcare professionals to infer causality and implement interventions guided by the processes that yield such desirable outcomes.

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**POS1-85**

**GET WITH THE PROGRAM: ADHERENCE TO A SMARTPHONE APP FOR SMOKING CESSATION AS A PREDICTOR OF QUITTING**

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**INTRODUCTION:** Adherence, the extent to which users engage in an intervention according to the developer’s plan, is predictive of positive outcomes in traditional and smartphone app-based smoking cessation programs. It is unclear whether the same applies to smartphone app-based smoking cessation programs despite their popularity and high population reach. This study examines the extent to which adherence to an Acceptance and Commitment Therapy (ACT) app for smoking cessation, predicts smoking cessation and points toward the next generation of MINDFUL. Using the ACT app’s log ﬁle data, we examined adherence among adult daily smokers who pro vided two month follow-up data in a single arm pilot study (N = 84). Full adherence to the app’s program required completion of four components: (1) creating a quit plan, (2) completing a series of 6 unlockable ACT exercises, (3) tracking a mini mum of 10 urges pass, and (4) visiting Anytime Coaching, which contains additional ACT exercises. In addition to full adherence, we also examined partial adherence (number of the four program components completed) and depth of adherence (number of uses within each component) as predictors of: (1) 7-day point prevalence abstinence and (2) reduction in smoking frequency from daily to nondaily smoking. RESULTS: 24% of users were fully adherent to the program. There was a trend for higher 7-day point prevalence abstinence rates among fully adherent users (OR = 2.80; p = 0.077). Partial adherence was not observed to be predictive of either cessation or reduction. While depth of adherence was not observed to be predictive of smoking cessation, tracking urges was predictive of smoking reduction at a trend-level (p = 0.056).

**CONCLUSIONS:** Although full adherence predicted smoking cessation, the majority of users did not complete the program. Results of this study highlight the challenge and the importance of engaging users in smartphone apps and other mobile health interventions for smoking cessation.

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**POS1-86**

**SMOKING CESSATION, COGNITIVE CONTROL, AND REWARD PROCESSING: AN FMRI PILOT STUDY**

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**PURPOSE:** The dual-systems model of addiction posits that addiction is the result of increased activity in reward-associated brain regions that overrides the decreased activity evident in cognitive control-associated regions. It remains unclear if behavioral smoking cessation treatments affect these regions. We hypothesized that Cognitive-Behavioral Therapy (CBT) enhanced with cognitive control “practice” would increase activation in the cognitive control regions and decrease activation in the reward regions. **METHOD:** Six moderate daily smokers wanting to quit smoking were given four weekly sessions of counseling with an emphasis on “quit practice” using scheduled, reduced smoking, a procedure in which participants were asked to smoke according to a strict schedule that gradually lengthened the inter-cigarette interval. Brain activation in response to passively viewing smoking-related and neutral cues was assessed using functional magnetic resonance imaging (fMRI) at baseline, 2 weeks, and 4 weeks. RESULTS: A 2 × 3 voxelwise ANOVA revealed a signiﬁcant Time (BL, wk 2, wk 4) x Stimulus (Smoke v Non-smoke) interaction with increased activation in the cognitive control network (i.e., the dorsolateral prefrontal cortex [x,y,z = -39, 44, 26; 278 voxels] and the dorsomedial prefrontal cortex [x,y,z = -1, 11, 39; 653 voxels]) and selective deactivation in the reward network, i.e., the ventromedial prefrontal cortex (x,y,z = 1, 29; -11; 80 voxels) to smoking cues across treatment (all ps < .05). CONCLUSIONS: CBT with quit practice increased brain activation in cognitive control regions and decreased activation in reward regions, suggesting that behavioral smoking cessation treatment effectiveness is mediated by these brain regions and that treatments should be designed to maximize changes in these regions. Future studies should control for repeated scanning, clarify what speciﬁcally about CBT causes brain changes, and determine if the brain changes are associated with successful abstinence.

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POS1-87
REAL WORLD USAGE PATTERNS FOR VARENICLINE
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Smoking cessation is a fully supported prevention intervention in the Affordable Care Act. One of the most effective medications for smoking cessation is varenicline, which is a nicotine analog that is sold by prescription. Our previous research has shown that use of smoking cessation medications after the first week decreases significantly. We believe this reduction in medication use between baseline and follow-up is a function of smoking cessation medication use being lower in real world use than in clinical trials. We assessed real world medication utilization patterns of varenicline among commercially insured enrollees and examined the relationship between enrollee out of pocket cost and varenicline medication use. We performed a retrospective cohort analysis using pharmacy claims data from Optum Labs Data Warehouse, a large database including administrative claims on over 100 million records. The study population included privately insured Medicare Advantage enrollees who had a varenicline claim between January 2008 and December 2012. Patients were considered to undergo continuous medication treatment if they had a subsequent fill during the 40 days of the previous fill date. There were 102,395 prescriptions claims for varenicline during the study period. Of these patients, 69,057 (67.5%) did not receive a subsequent varenicline refill, 24,188 (23.6%) received eight weeks or two fills, and 9,114 (8.9%) received the full 12 weeks (≥3 fills) of varenicline. This usage pattern is similar for patients with high and low copays. Varenicline has been shown to increase the quit rates of those being directed use of this medication should increase the quit rates of those being prescribed varenicline.

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POS1-88
SUBSTANCE USE TREATMENT OUTCOMES IN SPANISH SPEAKING SMOKERS ENROLLED IN A MULTISITE RANDOMIZED TRIAL OF MOTIVATIONAL ENHANCEMENT THERAPY
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OBJECTIVE: Smoking is the greatest preventable cause of death in the US, and individuals suffering from a co-occurring serious mental health disorder (SUD) smoke at a rate that is four times that of the general population. Furthermore, smoking is known to be associated with poorer SUD treatment outcomes, yet a limited amount of clinical and programmatic effort has gone towards reducing smoking cessation in the context of SUD treatment. Latinos are the largest ethnic minority in the US, and there are increasing concerns about the rise of substance use in this subpopulation. Latinos also face smoking related disparities, including lower success rates in quitting and access to services. Due to the unique characteristics and needs of substance users in treatment is the same for Latinos. This study addresses the relationship between smoking status and SUD treatment outcomes among Latinos. METHODS: Participants were 322 Spanish speaking Latinos enrolled in a SUD treatment study in five U.S. cities. Logistic regression examined associations between smoking status and treatment outcomes for non-tobacco substance use at follow-up. Covariates were age, gender, level of education, marital status, treatment group, and mandated treatment status. Interactions between covariates and smoking status were tested while controlling for all other covariates. RESULTS: Findings indicated that smokers have a reduced likelihood of abstinence for all non-tobacco substances (p = .001) and their primary drug of use (p = .007) after controlling for covariates. CONCLUSIONS: The results from this study found that Latino smokers have poorer SUD treatment outcomes, after accounting for a wide range of covariates. Based on these findings, it is suggested that smoking cessation programs tailored to Latinos substance users may be beneficial to SUD treatment outcomes. More research is needed in this specific area to determine the feasibility of smoking cessation in Latinos in SUD treatment programs.

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POS1-89
IS THE EFFECT OF ANHEDONIA ON SMOKING CESSATION GREATER FOR WOMEN VERSUS MEN?
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Anhedonia has been associated with difficulty quitting and relapse during smoking cessation treatment. Potential gender differences in the effect of anhedonia on abstinence have not been studied, as gender is often treated as a covariate. Using data collected during the first 8 weeks of a clinical trial of maintenance treatment for smoking cessation, we hypothesized that gender would moderate the adverse effect of anhedonia on short-term abstinence, such that the association would be strongest among women. Participants (N=525 smokers) smoked on average 17.5 (SD=8.3) cigarettes per day for 28.8 (SD=12.6) years. The sample was 50% female, 50% Black, with a mean age of 46±12. All participants included in the current analyses received 21 mg/day nicotine patch and four behavior therapy sessions for 8 weeks. Participants were classified at baseline using the Snith-Hamilton Pleasure Scale (SHAPS) as anhedonic (scores >2) or hedonic (≤2). Abstinence was measured at Week 8. Logistic regression analysis was used to test the interaction of anhedonia by gender to predict abstinence, adjusting for age, race, nicotine dependence and negative affect. Similar to prior studies, 13.3% of participants were classified as anhedonic and 18% reported current/past depression. Men were significantly more likely to be anhedonic than women (16.6% vs. 10.2%, p = .030). Hedonic and anhedonic participants did not differ on nicotine dependence or negative affect scores. Contrary to expectations, the interaction of hedonic capacity by gender predicting abstinence was statistically non-significant, x²(1)=1.8, p = .186. However, there was a main effect of anhedonia, such that anhedonia significantly predicted abstinence, OR=3.3, 95%CI=1.4-7.7, p<.005. Findings suggest that the association between anhedonia and short-term abstinence is similar for men and women. That anhedonic smokers were more likely to have antidepressant effects in smokers.

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POS1-90
CYTISINE AS AN EFFECTIVE TREATMENT FOR NICOTINE ADDICTION IN POLAND: 50 YEARS OF EXPERIENCE
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Cytisine, a plant alkaloid and partial agonist at cerebral α4β2 nicotinic acetylcholine receptors, has been used as a smoking cessation medication in Poland for more than 50 years. Cytisine acts by reducing the rewarding effect of nicotine and attenuating nicotine withdrawal and decreasing cravings. Recent evaluation of the clinical effectiveness and cost-effectiveness of cytisine compared with varenicline indicated that cytisine is anticipated to dominate varenicline, in that it produces more smoking cessation at 1 year, at a lower associated cost. In Poland cytisine is marketed as Tabex® and Desmoxan® (Polish Patent No. 220354). Desmoxan® is micronized cytisine with an innovative formulation of the drug which provides efficiency and stability of the active substance, and has been available over-the-counter since 2013. According to current sell out data in Poland during last 2 years (January 2013–April 2015), 1,265,000 packs of Desmoxan® were sold, accounting 75% of the Polish cytisine market. It is estimated that 14.2% of smokers in Poland used cytisine for smoking cessation for 1.5 years and near 30% (more than 2.6 million people) of smokers have been treated with cytisine in Poland since 2005. Findings from the clinical studies conducted in Poland demonstrate that cytisine is, at least probatively, if not more, effective as other pharmacotherapies. All clinical trials demonstrate that the drug is well tolerated. A recent Periodic Safety Update did not identify any safety signals for cytisine (based on a sample of more than seven million exposed smokers). An obvious advantage is its low cost - compared with varenicline, the price of cytisine course is about 15 times lower (17 EUR). On the basis of the Polish evidence we conclude that cytisine open a window on perspectives of nicotine addiction treatment for many smokers in countries with low income of citizens and financially restricted health care systems.

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POS1-91
REWARD PROBABILITY AS A MODERATOR BETWEEN ANHEDONIA AND POSITIVE REINFORCEMENT MOTIVES IN TREATMENT-SEEKING SMOKERS
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INTRODUCTION: Anhedonia, the decreased ability to experience pleasure and respond to reward, is associated with smoking maintenance and relapse. Anhedonic smokers may be particularly sensitive to nicotine’s rewarding properties. However, there is limited evidence linking anhedonia to positive reinforcement (PR) motives for smoking. We examined whether the association between anhedonia and the secondary dependence motive of PR is moderated by access to sources of reward in the environment. METHOD: The sample included 323 treatment-seeking smokers (43% female, 84% African-American, Age M(SD) = 44.79(11). Cigarettes per Day M(SD) = 14.10 (8.15)) with elevated depressive symptoms. Participants completed the Snith-Hamilton Pleasure Scale to assess general ability to experience pleasure and the Reward Probability Index (RPI) to measure access to environmental reward (B = -2.68 SE = 0.99, p = 0.008) and reward probability (B = -0.23 SE = 0.06, p<0.001) significantly predicted PR motives. There was also a significant interaction between anhedonia and RPI in the model (B = -0.35 SE = 0.10, p<0.001). Using procedures outlined by Aiken and West, the association between anhedonia and PR motives was significant at high levels of environmental reward (B = -5.76, t(284)= -4.56, p<0.001). Results were equivalent with negative reinforcement smoking motives, which is consistent with high correlations among reinforcement motives. CONCLUSION: Anhedonic smokers report similar rates of PR smoking motives as low anhedonic smokers when there is limited probability for environmental reward. With more environmental reward, PR motives for smoking significantly decrease for high anhedonic smokers. Findings suggest it is important to consider opportunities for reinforcement in the current environment when assessing motives for smoking.

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POS1-92
HEALTH, STIGMA, AND THE BURDEN OF SMOKING: A THEMATIC ANALYSIS OF COLLEGE SMOKERS’ VIDEO TESTIMONIALS
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Many young adults initiate cigarette smoking or escalate previously developed smoking patterns while at college, and thus the college years represent a critical time for intervention. Simmons et al. (2013) developed and tested an interactive web-based intervention for college smokers, including a component designed to induce cognitive dissonance through the creation of video testimonials discussing the negative aspects of smoking. The current study is a thematic analysis of the video content, with the aim to identify the most salient negative consequences of smoking as evidenced by the most frequently occurring themes among the video testimonials. Common themes were identified using Interpretive Phenomenological Analysis, with subordinate themes identified first then grouped into superordinate themes. The amount of time spent discussing each theme, as well as the strength of language used, was coded. A majority of participants discussed the superordinate themes of health consequences (75.9%) and social stigma (85%). Other topics mentioned included financial burden (50%) and chemicals (14.1%). Smoker stigma was the topic participants spent the most time talking about (17.7% of time), and cravings/addiction was discussed with the strongest language (65.7% of participants used strong language). Results provide insight into the attitudes of college student smokers, and may be used to guide the development of public health campaigns and smoking cessation interventions for this population. Moreover, our analysis represents a novel approach to explore the underlying mechanisms of an efficacious intervention.

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POS1-93
CORRELATES OF DISTRESS TOLERANCE AMONG HEAVY DRINKING SMOKERS
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Distress tolerance, in the context of smoking, involves foregoing the negative reinforcing properties of smoking to alleviate initial discomfort for smokers in response to negative affect. The Breath Holding Task, a validated index of physiological distress, has been associated with early smoking lapse; yet few studies have examined the correlates of distress tolerance indexed by the Breath Holding Task. The current study examined the association between distress tolerance and smoking history along with affect. A community sample (n = 234) of heavy drinking (≥ 7 drinks/week for females, ≥ 14 for males) daily smokers (≥ 10 cigarettes per day) completed the Breath Holding Task in which they were asked to continue holding their breath for as long as possible after acknowledging initial distress. Smoking characteristics were assessed by the Fagerström Test for Nicotine Dependence (FTND), Smoking History Questionnaire (SHQ), and Wisconsin Inventory of Smoking Dependence Motives (WISDM-68). Mood was assessed by the Beck Depression Inventory (BDI-II) and Snith-Hamilton Pleasure Scale (SHAPS). Partial correlations were computed between distress tolerance, measured by the task, and aspects of smoking behavior and affect, while controlling for nicotine dependence. Distress tolerance was associated with age of smoking onset (r = -0.17, p = 0.01), degree of anhedonia (r = -0.25, p < 0.01) and smoking motives, including cue exposure (r = 0.16, p = 0.01), social and environmental goads (r = 0.14, p = 0.04) and the weight control motive (r = -0.18, p < 0.01). Trend-level associations were found with respect to depressive symptoms on the BDI-II (r = -0.12, p = 0.07) and the affiliative attachment motive (r = -0.12, p = 0.07). These findings indicate that higher levels of distress tolerance is associated with beginning smoking at older ages, experiencing greater levels of anhedonia, and having stronger weight related motives for smoking, over and above the effects of nicotine dependence.
This study is part of a clinical program to assess the Tobacco Heating System (THS) 2.2, a candidate modified risk tobacco product. The objective of this study was to assess the reduction in exposure to selected harmful and potentially harmful constituents (HPHCs) after 5 days of ad libitum use of THS 2.2 menthol (mTHS) in confinement and 86 days in an ambulatory setting compared to continued smoking of combustible menthol cigarettes (mCC) and smoking abstinence (SA). Biomarkers of exposure (BoExp) to sixteen HPHCs were evaluated and selected Clinical Risk Endpoints (CRE) were monitored. After 2 days of baseline (CC smoking), 160 healthy smokers of mCC, aged minimum 22 years, were randomized to continue to smoke mCC (n=41), to switch to mTHS (n=80), or to stop smoking (n=38) for 90 days in this open-label, randomized, controlled, 3-arm parallel group study. Twenty-four hour urine and blood samples were collected to evaluate the levels of BoExp and CRE using validated analytical methods. This study was conducted in the U.S. according to GCP and is registered in ClinicalTrials.gov (NCT01989156). The average daily product use slightly increased from Baseline to the end of the entire exposure period in both, the mCC and mTHS study arms. Despite the increase in average product use, the total nicotine exposure measured as nicotine equivalents decreased from Baseline to Day 90 similarly in both arms. The levels of BoExp, except S-BMA, were significantly reduced at Day 5 in the mTHS arm as compared to mCC, approaching results obtained in the SA arm and were sustained throughout the entire exposure period. Monitored CREs started to show favorable changes indicating that the reduction in exposure may translate into changes in CREs. Product evaluation at Day 90 showed slightly less satisfaction for mTHS compared to mCC. However mTHS achieved an equally efficient suppression of urge to smoke compared to mCC over the entire exposure period. mTHS was well tolerated. mTHS showed significant, sustained reduction in exposure to HPHCs after 90 days of mTHS use, as compared to CC, approaching levels observed upon smoking abstinence. Monitored CREs started to show favorable changes.

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POS1-96
ALLOPREGNANOLONE AND PSYCHIATRIC DISORDERS IN MALE AND FEMALE SMOKERS
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In addition to its role in maintaining healthy nervous system function, emerging evidence suggests allopregnanolone (ALLO) may be a clinically relevant biomarker for psychiatric disorders. Given that smokers experience a high rate of psychiatric disorders, we aimed to explore the association between ALLO and psychiatric-related symptomatology in a sample of men and women who smoke. Further, we also sought to determine differences in ALLO levels among those with (versus without) a current or lifetime diagnosis of a psychiatric disorder. Men and women (free-cycling in the follicular phase), between the ages of 18-40 who smoked at least 5 cigarettes/day, attended a screening visit for an ongoing cessation trial. Participants provided a plasma sample for ALLO measurement and completed the Structured Clinical Interview for DSM Disorders (SCID). They also completed the following self-report measures: the Fagerstrom Test of Nicotine Dependence (FTND), Perceived Stress Scale (PSS), Beck Depression Inventory (BDI-II), and Profile of Mood States (POMS). Analyses included t-tests and multiple linear regression models. Participants (n=55) were mostly male (67%) and smoked, on average, 14.8±0.8 cigarettes/day. The average ALLO level was 0.26±0.01 ng/ml, which did not vary by gender (p=0.91). After adjusting for age, sex, and FTND score, there were no significant differences in ALLO levels between those who endorsed an internalizing disorder (n=20) nor those who endorsed an substance use disorder (n=34), compared to their non-endorsing counterparts (p=0.05). Further, there were no significant associations between ALLO levels and psychiatric-related symptomatology per the PSS, BDI-II and POMS overall and/or subscale scores (p>0.05). We did not observe any significant relationships between ALLO and psychiatric illness or related symptomatology in this sample of male and female smokers. Our findings may be limited by our small sample size and lack of variability in ALLO levels. Additional research is needed to confirm our observations.

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POSTER SESSION 1  •  THURSDAY, MARCH 3, 2016  •  11:30 A.M.-1:00 P.M.

POS1-97
TOXICANT EXPOSURE AND PHYSIOLOGICAL EFFECTS OF DUAL CIGARETTE AND ELECTRONIC CIGARETTE USE
Megan Scott1, Makeda Austin1, Amanda Graham2, Thomas Eissenberg1, Thokozeni Lipato1, Alison Montpetit1, Caroline Cobb1, Virginia Commonwealth University, USA, 1Schoeder Institute for Tobacco Research and Policy Studies, Truth Initiative, Georgetown University Medical Center, DC, USA, 2Virginia Commonwealth University Health System, VA, USA

Electronic cigarette (e-cigarette) use is a growing trend in the United States particularly among cigarette smokers. However, there is limited research on e-cigarette associated toxicant exposure and subsequent physiological effects in the context of cigarette smoking. This project examines how e-cigarette use influences toxicant exposure and physiological outcomes when used alone and in combination with cigarettes. Participants completed 4, 5-day conditions, which differed by own brand products used ad libitum: 1) cigarette and e-cigarette (dual), 2) cigarette-only, 3) e-cigarette-only, 4) no tobacco/cocaine (abstinence). Exhaled air carbon monoxide (CO), urinary cotinine, and exhaled breath condensate (EBC) pH were measured on Monday, Wednesday, and Friday of each condition. Currently, 6 dual users (4 male; 3 White, 3 African American/other) of ≥10 cigarettes per day (mean±SD; 17.9±13.5) and e-cigarette use ≥3 days/week (5.2±1.6) have completed the study. Repeated measures ANOVA with two factors (condition, 4 levels; day, 3 levels), followed up by Tukey’s HSD, was used to examine CO, cotinine, and EBC pH. CO had a significant interaction of condition by day (p=0.001). Relative to baseline, mean CO decreased significantly on Wednesday and Friday during the e-cigarette-only and abstinence conditions (p<0.05) but not during dual or cigarette-only. Relative to dual, the same pattern of significantly reduced CO on Wednesday and Friday was observed for the e-cigarette-only use and abstinence (p<0.05). There were no significant main effects or interactions for cotinine and EBC pH. On the Friday of each condition cotinine varied between dual and cigarette-only conditions (760.9±541.8 ng/ml, 1033.6±840.4 ng/ml, respectively) but was more similar during the e-cigarette-only and abstinence conditions (371.5±264.4 ng/ml, 292.5±283.5 ng/ml, respectively). A prominent trend observed for EBC pH was a decrease during abstinence over time. These preliminary findings support the exploration of differences in toxicant exposure and physiological effects between dual and single tobacco product use and inform our understanding of the harm potential these consumption patterns pose.

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POS1-98
HOUSEHOLD SMOKING RULES AMONG PREGNANT AND NEWLY POSTPARTUM SMOKERS RECEIVING TREATMENT
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INTRODUCTION: Cigarette smoking during pregnancy is the leading preventable cause of poor birth outcomes in the U.S. Despite this, even the most efficacious interventions leave the majority of women smoking, leading to further secondhand smoke exposure for their children. Most interventions for pregnant smokers do not aim to reduce environmental tobacco smoke (ETS) exposure. To begin assessing the need for such an intervention, we examined rules about smoking in the home among pregnant and newly postpartum women enrolled in smoking cessation and relapse prevention trials. METHODS: Participants (N = 370) were current or recent smokers at the start of prenatal care who participated in controlled trials on smoking cessation or relapse prevention during/after pregnancy. Participants were followed from the start of prenatal care through 24 weeks postpartum. Participants were asked, “How is cigarette smoking handled in your home?” and could respond: 1: No one is allowed to smoke, 2: only special guests are allowed to smoke, 3: People are allowed to smoke only in certain areas, and 4: People are allowed to smoke anywhere. Smoking status was biochemically verified. RESULTS: The majority of women (75%) continued to smoke at 24 weeks postpartum. Approximately half (52%) of those who continued to smoke reported that they allowed smoking somewhere in the home, with 30% reporting that smoking was allowed anywhere in the home. Abstainers were significantly less likely to allow smoking in the home (p<0.0001), with 28% reporting that they allowed smoking in some areas, and 9% reporting that they allowed smoking anywhere. In addition to smoking status, other significant predictors of smoking in the home included younger age, lower education, being single, fewer quit attempts, and heavier smoking. DISCUSSION: Unfortunately, the majority of women continue to smoke despite receiving efficacious smoking cessation and relapse prevention treatment. Lax rules about smoking in the home are highly prevalent, especially in those who are not able to quit. Those providing smoking cessation interventions for pregnant women may want to consider adding ETS avoidance counseling.

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POS1-99
A NOVEL TRAINING APPROACH TO ACTIVATE ALTERNATIVE BEHAVIORS FOR SMOKING AS PART OF A QUIT ATTEMPT
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OBJECTIVE: The current proof of concept study developed and tested a novel training approach using an Approach Bias Modification procedure designed to alter the implicit associations between alternative behaviors to smoking and negative affect, and explored its effects on depressive symptoms and on smoking behavior as part of a quit attempt. METHODS: Daily smokers with depressive symptoms (n=66; 39.4% female, 65.2% Black, Age M(SD) = 45.5 (13.6), CPD M(SD) = 12.8 (6.2); (BDI-II M(SD)) = 14.4 (7.7)) were trained across four sessions. During the training, alternative behaviors to smoking were identified (ideographically). Participants were subsequently trained to approach these behaviors automatically in the context of negative affect in two conditions. In the experimental condition (n=35) participants used a joystick and were instructed to avoid (push away) smoking-related targets and to approach (pull towards) alternative activities. In the control condition (n=31), participants pushed and pulled an equal amount of smoking and alternative activity-related targets. The effects of the training were assessed on 1) the implicit association between negative affect and smoking versus the alternative activities; 2) depressive symptoms and smoking outcomes at one-month follow up. RESULTS: Compared to the participants in the control condition, those in the experimental condition had increase in the accessibility of the alternative activity relative to smoking in relation to negative affect (F (1, 64) = 4.90, p < .03) and a significant decrease in depressive symptoms (F (1, 64) = 5.31, p < .05). Smoking outcomes at one month did not differ significantly across the two conditions although effects were in the favor of the experimental condition. CONCLUSIONS: The results of this pilot study suggest increasing accessibility of alternative behaviors to smoking in the context of negative affect may hold promise as a strategy to target depressive symptoms. Additional work is needed to determine if altering implicit associations between alternative behaviors to smoking in context of negative affect can impact course of smoking cessation, as well as to incorporate role of positive affect.

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POS1-100
EFFECTS OF VARENICLINE ON FIXED-DOSE ALCOHOL ADMINISTRATION IN SMOKERS MEETING CRITERIA FOR ALCOHOL USE DISORDERS
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BACKGROUND: Varenicline, a partial agonist of δ42 nicotinic acetylcholine receptors (nAchRs) and an FDA-approved smoking cessation aid, has been found to decrease alcohol self-administration in rodents and humans. Recent warnings regarding aversive events associated with varenicline used in conjunction with alcohol warrants further investigation into the safety of the drug when combined with alcohol. METHODS: This double-blind, placebo-controlled investigation examined the effects of varenicline (0, 1, 2 mg/day) on alcohol and tobacco craving, subjec-

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POSI-102  
**NICOTINE AND TOXICANT EXPOSURE AMONG SMOKERS OF LEADING U.S. CIGARETTE BRANDS: NHANES 2007-2012**

Liane Schneller*, Richard O’Connor, Roswell Park Cancer Institute, NY, USA

The four most popular US cigarette brands (Marlboro, Camel, Pall Mall, and Newport) account for over 60% of the market. Data collected during the National Health and Nutrition Examination Survey (NHANES) from 2007-2012 were used to estimate brand-specific nicotine intake and exposure to four polycyclic aromatic hydrocarbons, and heavy metals among current US cigarette smokers of the most popular US cigarette brands. From 2007-2012, 3,614 current smokers 20 to 80 years of age, who did not use any other form of nicotine, were examined at a mobile examination center and administered in-home personal health questionnaires that provided usual cigarette brand preference. Multivariate regression models were adjusted for smoker demographics, cigarettes smoked per day (CPD), and manufacturer. Geometric means are reported and urinary biomarkers were adjusted for urinary creatinine (UCr). There were no significant changes observed in mean serum cotinine levels across the three survey periods. Mean serum cotinine differed across brands, controlling only for CPD (Means: Mar=102.33ng/mL, Cam=131.83ng/mL, PM=229.03ng/mL, New=162.19ng/mL, Other=158.49ng/mL; p<0.0001). We also observed brand differences in the unadjusted models of urinary NNAL (Means: Marn=0.20ng/mgUCr, Cam=0.14ng/mgUCr, PM=0.36ng/mgUCr, New=0.15ng/mgUCr, Other=0.26ng/mgUCr; p<0.0001) and Cadmium (Means: Marn=3.16E-04ng/mgUCr, Cam=1.86E-04ng/mgUCr, PM=5.01E-04ng/mgUCr, New=2.51E-04ng/mgUCr, Other=4.79E-04ng/mgUCr; p<0.0001). However, when other person-level factors are accounted for in the model, the brand differences are eliminated. Other biomarkers indicative of cigarette smoking were also analyzed and similar patterns were found. When adjusted for personal characteristics associated with brand selection, there is little difference in exposure to nicotine or toxicants across brands. Any differences in exposure across brands likely reflect interindividual differences rather than product differences. Implications for regulatory science are discussed.

Funding: No Funding

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POSI-103  
**INTERACTIVE EFFECTS OF ESTRADIOL OR SEX WITH COMT GENOTYPE ON RESPONSE TO NICOTINE ABSTINENCE AND NICOTINE DELIVERY**

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Cigarette smoking is the leading preventable cause of death in developed countries. Identification of factors contributing to individual variability in responses to nicotine withdrawal may aid the development of treatment approaches for nicotine dependence. Catechol-O-methyltransferase (COMT) Val158Met genotype (rs4680) impacts neurobiological systems linked with addictive behaviors (e.g., prefrontal cortical and striatal dopamine levels) in a sexually dimorphic manner and interacts centrally with the gonadal hormone, estradiol, which fluctuates across the menstrual cycle. COMT, sex and menstrual cycle phase have each been shown to contribute to individual variation in response to nicotine withdrawal and administra-

POSI-102  
**NICOTINE AND TOXICANT EXPOSURE AMONG SMOKERS OF LEADING U.S. CIGARETTE BRANDS: NHANES 2007-2012**

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Funding: No Funding

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POSI-103  
**INTERACTIVE EFFECTS OF ESTRADIOL OR SEX WITH COMT GENOTYPE ON RESPONSE TO NICOTINE ABSTINENCE AND NICOTINE DELIVERY**

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Cigarette smoking is the leading preventable cause of death in developed countries. Identification of factors contributing to individual variability in responses to nicotine withdrawal may aid the development of treatment approaches for nicotine dependence. Catechol-O-methyltransferase (COMT) Val158Met genotype (rs4680) impacts neurobiological systems linked with addictive behaviors (e.g., prefrontal cortical and striatal dopamine levels) in a sexually dimorphic manner and interacts centrally with the gonadal hormone, estradiol, which fluctuates across the menstrual cycle. COMT, sex and menstrual cycle phase have each been shown to contribute to individual variation in response to nicotine withdrawal and administration. However, prior studies have not yet assessed the interactive influences of COMT with sex and sex hormones (e.g., estradiol) on response to nicotine abstinence and delivery. Nicotine dependent individuals (N=196) rated withdrawal symptoms, smoking urges and affect, and completed cognitive tasks following biochemically-confirmed overnight abstinence and after a nicotine administration session. Subjective drug effects were rated during intravenous administration of saline, 0.5mg and 1.0mg nicotine/70kg. Analyses with mixed-models assessed effects of genotype, sex, estradiol levels (in women), and interactions with time-point or dose. In women, individuals with the high COMT enzyme activity genotype (Val/ Val), relative to Met carriers, reported more severe smoking urges and withdrawal symptoms following overnight abstinence. This genotype effect was not observed in men or after nicotine administration. Estradiol and indicators of menstrual cycle phase interacted with COMT genotype to affect subjective response to nicotine abstinence and delivery. These sex- and gonadal hormone-sensitive pharmacogenetic findings may shed light on mechanisms contributing to individual differences in barriers to smoking cessation or potential sex-specific treatment options.
INTRODUCTION: Considerable research is ongoing examining the psychopharmacology of very low nicotine content (VLNC) cigarettes. One question about VLNC cigarettes is whether they induce extinction during initial exposure in current smokers. Extinction occurs when ongoing reinforcement for operant responding is discontinued. A common effect of withdrawing reinforcement is an extinction burst characterized in part by abrupt increases in the force and frequency of responding. With smoking, such an extinction burst might be expected to include discernible changes in smoking topography, including an increase in frequency, duration, or volume of puffs taken. To our knowledge, there has been little research on this question with regard to initial exposure to VLNC cigarettes. The purpose of the present investigation was to assess for the presence of an extinction burst upon initial exposure to cigarettes varying in nicotine content. METHODS: Participants were 18 adult current smokers from one of three vulnerable populations (economically disadvantaged women, opioid abusers, individuals with affective disorders). Participants were randomized into one of four conditions: (a) VLNC cigarettes appearing organically identical to their usual cigarette, (b) VLNC cigarettes appearing organically identical to their usual cigarette, (c) a non-smoking control condition, and (d) a no-treatment control condition. Each condition consisted of five sessions over a 24-h period. cigarette consumption was measured at baseline, and Day 8. Participants smoked an average of 19 cigarettes per day throughout this period. In addition, smokers were administered a daily questionnaire assessing smoking behavior, and smoking topography was recorded using a custom-built data collection system. RESULTS: VLNC cigarettes were smoked significantly less than their usual cigarettes, and the number of cigarettes smoked during the study was significantly less than during baseline. Furthermore, the number of cigarettes smoked was significantly less during the first 6 h of the study compared to the last 6 h of the study. CONCLUSIONS: VLNC cigarettes appear to produce sufficient direct and/or indirect changes in smoking behavior to support the hypothesis that they may be effective in reducing cigarette consumption in adult smokers. However, additional research is needed to determine the long-term effects of VLNC cigarettes on smoking behavior.
POSI-107
THE IMPACT OF CIGARETTE NICOTINE CONTENT ON NEUROCognitive OUTCOMES: RESULTS OF A 6-WEEK, RANDOMIZED TRIAL

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Regulated reduction of nicotine in cigarettes has the potential to reduce cigarette reinforcement, dependence, and toxicant exposure. A large randomized trial was conducted to examine the dose effects of nicotine content (0.4 - 15.8 mg/g) in cigarettes on smoking and related measures over a 6-week period in non-treatment-seeking smokers (Donny et al., in press). Here we describe the neurocognitive performance of study participants on measures of sustained attention and inhibitory control (Continuous Performance Task; CPT), working memory (N-back Task), and information processing/mathematical ability (Arithmetic Task; AT). Smokers (N=387) who smoked at baseline (480 cigarettes) and again after 2 and 6 weeks of smoking randomly assigned experimental cigarettes. Data were analyzed with repeated measures ANOVAs. CPT performance decreased over time; qualitative orderly dose-effects were observed, but the main effect of dose was not statistically significant. For the N-Back Task, total correct responses increased over time for 0-back and 2-back, reaction time (RT) improved for 2-back, but was worse for 0-back. A main effect of dose was found for RT on both 0-back and 2-back, but the data were not dose-orderly, suggesting differences are not a true drug effect. No main effects of time or dose were observed for correct responses or errors on the AT. However, an effect of time was observed for RT on attention problems, with performance improving across sessions. An effect of time and dose was observed for RT on subtraction problems, with performance improving across sessions, but the effects were not orderly by dose. Overall, the magnitude of change in performance observed was generally small and would not be considered clinically significant. However, most participants reported smoking some usual brand cigarettes, in addition to study cigarettes, possibly masking dose-effects on some outcomes and underestimating the magnitude of effects that would be observed under conditions of full compliance. This suggests that nicotine reduction policy would likely have minimal impact on neurocognitive functioning in smokers.

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POSI-108
LONGITUDINAL EXAMINATION OF THE ASSOCIATION BETWEEN INTERNALIZING SYMPTOMATOLOGY AND DELINQUENT BEHAVIORS IN ADOLESCENT TOBACCO USE

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Prior research has found that adolescents with higher levels of delinquent behaviors and internalizing symptomatology are at greater risk for tobacco use. However, research has been limited in disentangling the roles of delinquent behaviors and internalizing symptoms in teen tobacco use relative to each other and which specific dimension of the internalizing spectrum (e.g. depression vs. anxiety) may be most prominent in this comorbidity. The goal of the present study is to test whether the relationship of delinquent behaviors and multiple internalizing disorders (i.e. Major Depressive Disorder, Generalized Anxiety Disorder, Social Phobia, and Panic Disorder) to adolescent tobacco use is redundant, additive, or synergistic. The current study utilized two waves of data collected six months apart from the Happiness & Health Study of 3,383 adolescents (M age = 14.08 years old; 53% females) in the Los Angeles Area who were beginning high school at the time of study entry. This study examined the likelihood of reporting past six-month tobacco use at follow-up based on the number of delinquent behaviors and internalizing symptoms endorsed at baseline. Results indicated that the relationships between delinquent behaviors and both Generalized Anxiety Disorder and Social Phobia were redundant. The relationship between delinquent behaviors and Major Depressive Disorder was additive, such that, the odds ratio of reporting past six-month tobacco use was 1.74 (p < .0001) and 1.13 (p < .05), respectively. Lastly, the relationship between delinquent behaviors and Panic Disorder was synergistic. Adolescents low in delinquent behaviors were at greater risk for reporting tobacco use as the number of Panic Disorder symptoms endorsed increased; however, the risk carried by panic was diminished among teens with high delinquent behaviors. These results point to the clinical importance of examining multiple facets of the internalizing symptomatology in the internalizing-externalizing comorbidity, as both Panic Disorder and Major Depressive Disorder both had non-redundant associations with delinquent behaviors on adolescent tobacco use.

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POSI-109
LENGTH OF RECOVERY FROM SUBSTANCE USE DISORDERS AND TOBACCO DEPENDENCE TREATMENT OUTCOMES

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With smoking prevalence rates 4 to 5 times greater than the national median, those in recovery from substance use disorders (SUDs) are at significant risk for tobacco-related death and disease. The reasons for this disparity are unclear. This study explored relationships between length of recovery, tobacco-related clinical characteristics, and abstinence from smoking among participants enrolled in a tobacco dependence treatment clinical trial. Inclusion criteria included: daily smoking, ready to quit in 30 days, able to engage in group treatment, drinking ≤20 alcoholic drinks per week, and passing a urine test for drugs of abuse. Demographic, clinical, and environmental information was collected at baseline. Outcome assessment included days to relapse and abstinence at 24 weeks after the quit date. Significance tests included analysis of variance and chi square analysis. Participants (n=187) were classified as not in recovery (43%; no history of SUDs, NR), in short-term recovery (22%; ≤12 months, STR), or in long-term recovery (35%; >12 months, LTR). Participants were 71% male, 66% Black, and 20% Hispanic. The STR and LTR were of lower socioeconomic status than NR (p=01 and .02). Compared to LTR and NR, STR participants were more likely to report smoking restrictions in their homes (p<.01), STR reported a greater amount of discrimination (p=.02), greater positive affect (p=.01), and more positive religious coping (p=.03) than NR. STR relapsed n=49 days sooner than NR (p=.01), but there was not a significant difference in days to relapse between NR and LTR (p=.11), and no significant difference among the three groups in point prevalence abstinence rates (p>.07). STR relapsed earlier, but there were no differences among the groups in long-term abstinence and few overall differences between LTR and NR participants. These findings suggest that short-term recovery from SUDs negatively influences short-term relapse to smoking, but might not have an overall influence on long-term abstinence from smoking. These findings suggest the need to examine more closely the role of length of recovery in the treatment of tobacco dependence and relapse to smoking.

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POSI-110
ATTITUDES AND BELIEFS ABOUT ELECTRONIC CIGARETTES AMONG SMOKERS LIVING WITH HIV AND THEIR HEALTHCARE PROVIDERS

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People living with HIV/AIDS (PLWHA) are disproportionately burdened by the harm associated with tobacco smoking. The increasing availability of electronic cigarettes (ECIGs) may provide a novel opportunity for HIV-infected smokers to reduce or quit their use of combustible tobacco products, which may in turn improve their health. However, little is currently known about the perceptions and attitudes of PLWHA toward ECIGs. Further, as healthcare providers represent a critical link to information, understanding their perceptions of the risks and benefits of ECIGs is of paramount importance. To address these questions, we conduct-
ed two parallel studies involving: a) a series of five focus groups conducted with PLWHA who currently smoke (n=20); and b) an electronic survey of HIV healthcare providers (n=35). Perceptions of ECIGS among PLWHA focus group participants were mixed. Several participants indicated that they believed nicotine was the harmful ingredient in combustible cigarettes, and so perceived ECIGS as being equally hazardous; others were concerned about lack of FDA approval and unknown chemicals contained in the vapor. However, at least half of participants perceived ECIGS as a less harmful alternative to smoking and a more effective substitute than other forms of nicotine replacement (e.g., patch or gum). Many expressed an interest in switching to ECIGS, but cost was cited as a major barrier to their use. Provider survey respondents indicated that nearly 16% of their patients who smoke had inquired about ECIGS in the past year, but they expressed limited knowledge about ECIGS, with 49% of providers indicating that they are “not at all knowledgeable” and 51% identifying as “somewhat knowledgeable.” Only 43% of providers perceived ECIGS as a safer alternative to combustible cigarettes, and the majority indicated that they would be “not at all likely” (43%) to recommend them to their patients who are unable to quit smoking or would need more information first (40%). These results suggest that smokers living with HIV are highly interested in products such as ECIGS, and underscore the urgent need for more information about health effects of their use.

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**POS1-111**

THE ANATOMY OF RISK BETWEEN SMOKERS AND NON-SMOKERS: NICOTINE PRODUCT RISK PERCEPTIONS

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What we perceive as risky does not always align with the hazard of consequences from a given item or activity. For example, cigarette smoking is the leading cause of preventable death in the United States, and yet despite many public health initiatives to education the population on the risk of use, approximately 20% continues to smoke cigarettes and use other nicotine products. One possible reason for continued use is that individuals who smoke perceive specific characteristics of risk differently than non-smokers. Using Slovic’s Psychometric Risk paradigm (Slovic, 1987) we compared perceived risk of 73 items ranging from commercial airplanes to nicotine patches in smokers (n = 120) and non-smokers (n = 110). Mean scores for each of the items on the 16 subcomponents of the Risk Characteristics questionnaire were computed for the two participant groups. Spearman’s rank correlation coefficient was used to examine the ranked average risk ratings of all items between smokers and non-smokers. A principal component analysis was used to reduce the 16 subcomponents of the risk characteristic questionnaire. Smokers and non-smokers did not significantly differ in perceived risk ratings (p = 0.93). However, smokers rated nicotine products as significantly less risky than non-smokers (p < 0.05). The principal component analysis reduced the 16 subcomponents of risk into 5 factors (with eigenvalues greater than 1) for both groups that explained approximately 63% of variance. Overall, smokers and non-smokers perceived risk similarly. However, smokers selectively rated nicotine products such as Snus and e-cigarettes as less risky than their non-smoking counterparts supporting the assertion that cigarette smokers may perceive some specific subcomponents of risk differently than non-smokers. Furthermore, principle component analysis reveals distinctive factor loadings between smokers and non-smokers indicating differing anatomies of risk perception specific to nicotine products.

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**POS1-112**

MECHANISTIC EVALUATION OF THE IMPACT OF SMOKING AND CHRONIC OBSTRUCTIVE PULMONARY DISEASE ON BIOLOGICAL PROCESSES IN THE NASAL EPITHELIUM

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Chronic obstructive pulmonary disease (COPD) is one of the major causes of mortality and morbidity worldwide. The development of markers of COPD onset is hampered by the accessibility of the primary target tissue and there is a need to consider other sample sources as surrogates for biomarker research. Airborne contaminants pass through the nasal epithelium before reaching the lower airways, and the similar histology and cellular composition with bronchus makes it an attractive surrogate for lower airways. In this work, we describe the transcriptomics findings from the nasal epithelia of subjects enrolled in a clinical study focusing on early stage COPD. The network based analysis of transcriptomic data allowed us to identify the biological pathways impacted in the upper respiratory tract in smokers and those with early stage COPD compared with never smokers. While the up-regulation of the xenobiotic metabolism response was captured in both a public dataset of large airway and in the nasal epithelium from smokers and nonsmokers, we observed opposite biological impacts in the nasal epithelium and large airway datasets compared with public small airway dataset from COPD subjects. The observed impact was related to MyD88/IRAK1 signaling. In summary, nasal and lower airway immune responses are likely to be considerably different in COPD subjects and caution should be taken when using the upper airway as the surrogate for the lower airway. Nevertheless, the network approach provides a very sensitive means to investigate the impacted biology and possibly scoring of smokers to identify those at risk to develop COPD based on the nasal transcriptome.

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**POS1-113**

OFFERING CONSUMERS CHOICES: PATTERNS OF SERVICE SELECTION IN A MULTI-SERVICE CESSATION PROGRAM

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BACKGROUND: In 2014, ClearWay Minnesota launched a new suite of QUIT-PLAN® Services - a set of Individual Services to choose from (2 week NRT starter kit, email program, text messaging, and printed quit guide), and the Helpline (phone counseling plus NRT, integrated email, integrated text messaging, and materials). Tobacco users in Minnesota can enroll in these services online or by phone. Within this environment of choice, we explored patterns of service utilization. METHODS: Twelve months of registration data (March 3, 2014 – February 28, 2015; n=15,536) were analyzed. Outcome data were collected with 7-month follow-up surveys (by phone or online; n=1,170) based on stratified sampling by service group. Data were analyzed with descriptive statistics, chi-square tests, and ANOVA. Outcome data were weighted to reflect levels of enrollment across different service groups. RESULTS: The majority (70.1%) of consumers enrolled in services online; 29.9% enrolled by phone. Registration mode was related to service choice (p<.001), with 77.2% of those selecting the Helpline enrolling by phone; 76.0% of those selecting an NRT Starter kit enrolled online. Starter kits alone were selected most commonly, (43.6%), followed by starter kits with email (20.5%) and starter kits with email and text (11.0%). The Helpline was selected by 12.9% of enrollees. There were significant differences in service choices by age, gender, and race (p<.001). Thirty day point prevalence abstinence rates ranged from 29.8% (Helpline) to 20.0% (text and/or email). While differences in quit rates by service were not statistically significant (p=0.664), their order from highest to lowest corresponded to important groups including older tobacco users and African Americans. CONCLUSIONS: Findings suggest when presented with a choice, tobacco users are making decisions that match their preferences for technology and service intensity. Offering a two week starter kit was popular and attracted a younger, more male group of enrollees; the Helpline continues to appeal to important groups including older tobacco users and African Americans. Choice is key in advancing the reach and effectiveness of quitlines.

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e-cigarette use as a means to quit smoking, while control smokers are more likely to endorse experimental use. These results support prior studies suggesting that smokers with mental illness are interested in quitting and may seek out alternative approaches for cessation.

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**POS1-118**

A CURRICULUM ASSESSMENT OF TOBACCO DEPENDENCE EDUCATION IN ORAL HEALTH PROFESSIONAL EDUCATION

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AIM: Tobacco-related oral diseases include oral cancer, periodontitis and tooth loss. Assessment of tobacco dependence education (TDE) is an essential step to plan, develop and implement new educational strategies to facilitate the training of competent oral health clinicians. METHOD: Three TDE surveys are present, contradicting and comparing didactic and clinical components in dental, dental hygiene (DH) and dental assisting (DA) schools. All studies utilized the same comprehensive survey instrument thus providing a unique window into tobacco education. RESULTS: During the fall 2013, all accredited U.S. and Canadian dental schools were surveyed. The response rate was 66% (49 of 75). Results: 1) average time spent on TDE across the curriculum was 837 min, 2) periodontics, oral pathology and clinic were the most frequently cited subject areas containing TDE, 3) informal clinical competencies were utilized 54% of the time and, 4) faculty felt the most confident teaching tobacco-related oral pathology. During the 2007-2008 academic year, all accredited DH programs were surveyed. The response rate was 66% (167 of 253). Results: 1) the average time spent on TDE across the curriculum was 402 minutes, 2) periodontics, oral pathology and clinic were most frequently cited subject areas containing TDE, 3) tobacco treatment was informally assessed 67% of the time and, 4) faculty felt the most confident teaching tobacco-related oral pathology. During the 2012-2013 academic year, all accredited DA programs were surveyed. The response rate was 30% (89 of 298). Results: 1) the average time spent on TDE across the curriculum was 17 minutes, 2) oral pathology, preventive dentistry and pharmacy were the frequently cited subject areas containing TDE, 3) tobacco treatment was informally assessed 43% of the time and, 4) faculty felt the most confident teaching tobacco-related oral pathology. CONCLUSIONS: With the exception of time spent on TDE, results were closely aligned between disciplines. All three studies reported curricular inconsistencies and the need for continued integration of TDE demonstrating strong intentions to expand content, assessment and faculty development.

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**POS1-119**

EXERCISE AND CRAVING DURING PREGNANCY: DOES MORE MAKE A DIFFERENCE?

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BACKGROUND: Craving for cigarettes is among the most commonly reported withdrawal symptom in smokers. Recent studies have shown that craving in pregnant smokers is reported as less severe than non-pregnant smokers. Studies have also found that moderate activity in non-pregnant smokers decreases the reward component of craving and increases the delay to smoke. The objective of this study is to determine if there is an association between exercise with craving and withdrawal in a sample of pregnant smokers. METHODS: This is a secondary analysis from a large controlled cross-over study examining nicotine response in pregnant women age 18-35 in their 2nd or 3rd trimester who smoke. Inclusions include smoking ≥5 CPD, stable physical and mental health and no psychotropic medication. Subjects attended a screening visit during ad lib smoking and complet-
ed the Godin Leisure-Time Exercise Questionnaire (LTEQ), Minnesota Withdrawal Survey (MNWS) and Questionnaire of Smoking Urges (QSU) to measure their levels of activity, withdrawal and craving. Pearson correlation coefficients were calculated between exercise score (LTEQ) and withdrawal/craving symptom scores (MNWS/QSU). RESULTS: In this combined sample of pregnant women, 46% were in 2nd while 53% were in 3rd. Fifty-six percent of the group marked “rarely/never” on the LTEQ when asked how often they engage in regular activity. The correlations between LTEQ and craving, QSU Factor 1, and QSU Factor 2 were r = -0.067 (p=0.6306), r = 0.113 (p=0.4143), and r = 0.051 (p=0.7129), respectively. The largest correlation found in this sample of pregnant women was between withdrawal and LTEQ, which was only slightly positive (r=0.232, p=0.0916). CONCLUSION: No association was found between exercise and craving or withdrawal in this group of pregnant women. Limitations include small numbers and one time point for measurement of exercise. Future research should explore real time exercise during pregnancy and if this has an association with smoking symptomatology.

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**POS1-120**

SMOKING CESSATION IN PATIENTS WITH A PRIOR OR CURRENT PSYCHIATRIC DISORDER: A DOUBLE-BLIND COMPARATIVE ANALYSIS OF THE NEUROPSYCHIATRIC SAFETY AND EFFICACY OF VARENICLINE, BUPROPION, NICOTINE REPLACEMENT THERAPY [NRT], AND PLACEBO

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We enrolled 51 smokers who were motivated to stop smoking, all with a prior or current psychiatric diagnosis, into a double-blind clinical trial. Forty-five subjects who, after a 3-to-14 day screening period, met all of the entry criteria and were randomly assigned to varenicline, bupropion, nicotine replacement therapy (NRT) patch or placebo, on a 1:1:1:1 ratio. There were weekly visits up to Week 6 and bi-weekly visits between Weeks 6 and 12. The primary objective was to evaluate the neuropsychiatric profiles of varenicline and bupropion, as compared with placebo, including neuropsychiatric adverse experiences [NAsEs] at endpoint. The primary efficacy endpoint was 4-weeks carbon monoxide [CO]-confirmed continuous abstinence from Weeks 9 through 12. Only one (1) subject reported an NAE. She began the study with a primary diagnosis of Generalized Anxiety Disorder [GAD] and was under the care of a therapist. At Week 9 she began takingripiprazole, missing study medication doses and ‘losing’ her NRT patches. Fifteen of the 42 evaluable subjects, or 35.7%, met the CO value criteria to be categorized as successful “quitters.” Baseline traits associated with successful cessation included the average number of cigarettes smoked per day (p < .05) and the number of prior quit attempts (p < .05); the age one first started smoking and baseline Body Mass Index [BMI] also demonstrated a statistical trend as having potential predic-
tive utility.

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**POS1-121**

SUBJECTIVE EFFECTS OF DUAL USE OF CIGARETTES AND E-CIGARETTES AMONG CURRENT DUAL USERS

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Prevalence of electronic cigarette (e-cigarette) use has increased dramatically in recent years with a high proportion of current e-cigarette users concurrently smoking cigarettes. Despite this pattern of use, the acute effects of dual use have not been examined system-
atically. Subjective effects assessment is one measure shown to be predictive of tobacco
POS1-123 VALIDATING THE MEASUREMENT MODEL FOR A SMOKING CESSATION TEACHABLE MOMENT IN THE SURGICAL SETTING
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A teachable moment is an experience that motivates one to adopt health risk-reducing behaviors. McBride et al. (Health Ed Res 18:156-170, 2003) proposed a heuristic that three constructs are determinative: positive and negative affective responses, self-concept, and risk perception. Because surgery is associated with spontaneous tobacco abstinence, it provides an opportunity to test this heuristic. As a first step, we here describe work to develop assessments measuring these three constructs in the surgical setting. Similar existing measures (PANAS for affective responses, Smoking Consequences Questionnaire-Adult for risk perception, and Smoker and Abstainer Self-Concept Scales for self-concept) were adapted with the goal of developing an instrument that could be administered to patients scheduled for elective surgery at the time of evaluation in a preoperative clinic, and re-administered on the morning of surgery. Principal components analysis and Cronbach’s alpha were performed to evaluate the measurement model for these three adapted instruments, with putative items eliminated as appropriate based on this analysis. On initial administration, the positive and negative affect adapted subscales yielded a two factor model with a high internal consistency (alpha = .82, R squared = .86 and alpha = .91, R squared = .94, respectively). The adapted self-concept subscales also supported a two factor model with high internal consistency (alpha = .89, R squared = .91 and alpha = .91, R squared = .94, respectively). The adapted measures of the negative consequences of smoking and benefits of abstinence yielded a two factor model with high internal consistency (alpha = .90, R squared = .93 and alpha = .87, R squared = .91, respectively). Intra-class correlation coefficients indicated excellent test-retest reliability on repeated administration. The results suggest that these adapted instruments provide a cohesive measurement model that will be used to study the McBride heuristic of a teachable moment in the surgical setting.

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POS1-124 ELDERLY PROFILE WITH MULTIPLE CHRONIC CONDITIONS TREATED IN THE INTERVENTION GROUP FOR SMOKING CESSATION
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INTRODUCTION: HIPERDIA Center of Juiz de Fora (Brazil) attends patients at high cardiovascular risk following parameters of effectiveness and efficiency. User profile survey identified 11.4% of smokers (n=113) motivating the implementation of the Integral Assistance Unit Smoking Cessation (UAI-T). Although this population is a predictor of cessation, the tobacco old profile is still little known. OBJECTIVE: To describe the profile of elderly UAI-T. METHODS: Longitudinal study (May/2012 to May/2015), referring to 24 consecutive treatment groups, which included behavioral and cognitive awareness approach (CAA). RESULTS: We attempted 170 users, with 29.4% (n=50) aged. Average age of the elderly was 64.85 (SD=4.94) years and of those, 84.8% (n=50) were young elderly (60-69 years), most women (52.5%), married (48.3%), low level of education (86.4%), hypertension (94.9%), Type 2 diabetes (44.1%) and chronic kidney disease (33.9%), obesity (25.4%), physical inactivity (57.6%), depressive symptoms (36.2%) and alcohol abuse (25.4%) were the most frequent characteristics. The average length of treatment was 37.34 (SD=11.54) years and more than half of the elderly (55.9%) smoked more than twenty cigarettes a day. High nicotine dependence was found in 35.6% of participants. Attempts to stop the addiction were detected in 71.2% of participants. At four weeks termination rate was 30.4%, and eight weeks, 46.2%. Combined medication was used in 59.1% of cases. CONCLUSION: The elderly studied were heavy smokers with depressive symptoms, high nicotine dependence as well as high use of combined medication. The sample showed smoking...
cessation up character, with better results in 8 weeks, and 71.2% had attempted to quit smoking. Encourage health professionals to help smokers in cessation should be a priority target in health care, especially the elderly.

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**POS1-125**

**PILOT STUDY OF CIGARETTE SMOKERS USING A NEW ORAL TOBACCO PROTOTYPE (VBM-FG2)**

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**INTRODUCTION:** Many Adult Smokers (AS) are looking for alternative tobacco products. Attria Client Services has developed an innovative new oral tobacco product for AS, VBM-FG2. VBM-FG2 is a polymer based semi-liquid disc containing approximately 1.5 mg of tobacco derived USP grade nicotine, non-tobacco cellulose, and flavoring. VBM-FG2 dissolves in the saliva, leaving no visible residue and is discarded after use. The purpose of this pilot study was to investigate changes in daily cigarette consumption and levels of selected biomarkers of exposure (BOEs: exhaled breath CO, blood carboxyhemoglobin [COHb], urinary nicotine and five of its metabolites, total urinary NNAL and urinary S-Phenyl Mercapturic Acid).

**METHOD:** AS included in this study (n=158) were generally healthy, smoked 10 or more cigarettes per day (CPD) and were not intending to quit in the next 30 days. Baseline assessments were conducted for 1 week and 154 participants were randomized into Control Group (CG, n=62) or Test Group (TG, n=92) for a 4 week product use period. Participants in the TG were allowed to use VBM-FG2 (up to 24 discs per day) and use their own cigarettes ad libitum; the CG continued smoking their own cigarettes ad libitum. CPD and VBM-FG2 use were tracked daily with an Interactive Voice Response System. Blood and spot urine samples for BOEs were collected weekly.

**RESULTS:** On average, by the end of the study, participants in the TG used approximately 5 VBM-FG2 discs per day [average range per day for a 1 week period: 0-20] and reduced their average CPD by 22.6% compared to the CG (p<0.05). Approximately 12% of the TG reduced their average CPD by 50% or more (2 participants reported 100% reduction in CPD) for the last week of the study compared with the study group with no change in the CG. Although all BOEs tended to be lower in the TG compared with the CG, only COHb was statistically significant (p<0.05). Conclusions: These results suggest that, on average, AS (who are not intending to quit smoking) reduce their CPD when using VBM-FG2 and a subgroup of AS can significantly reduce their cigarette smoking while using VBM-FG2, offering an opportunity for smoking related harm reduction.

Funding: Project was funded by Attria Client Services LLC

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**POS1-126**

**A CASE FOR AN FDA COMPLIANT ENZYMATIC METHOD FOR CREATININE TO SUPPORT TOBACCO RESEARCH**

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Tobacco smoke exposure is often assessed using biomarkers such as nicotine and its metabolites in urine samples. Correction of urine biomarker samples for creatinine concentration is an adjustment that is widely used throughout biomed-ical and tobacco research. Although creatinine concentration determination in clinical practice is more than 100 years old, there is still much debate regarding its accuracy, precision and analytical specificity. Inaccuracy of creatinine measurement arises due to the differences among manufacturers on how they assign the values for calibrators and controls. The National Kidney Disease Education Program (NKDEP) in collaboration with the International Federation of Clinical Chemistry and Laboratory Medicine and the European Federation of Clinical Chemistry and Laboratory Medicine created the Creatinine Standardization Program (CSP). CSP recommends that creatinine methods be traceable to an isotope dilution mass spectrometry (IDMS) reference measurement procedure. Standardization of method calibration will reduce the inter-laboratory bias in results and enable more accurate measurement of creatinine in serum and urine. While major manufacturers in the USA and European Union (EU) has implemented this recommendation, examination of data from international publications suggests that we are in a transition period and further work is needed to achieve substantially improved accuracy in creatinine measurement with routine clinical laboratory methods. Implementation of IDMS traceable reference materials does not, however, solve the issues of analytical non-specificity. Alkaline picrate-based methods, including “compensated” Jaffe methods, are known to be sensitive to non-creatinine chromogen and is a significant source of inaccuracy in results. To improve inaccuracy some manufacturers have responded by adjusting the calibrator concentrations. This approach is seriously flawed due to the fact that the calibrator concentrations assumes that interference from non-creatinine chromogen is constant and linear across the calibration range. Enzymatic assays for creatinine are known to be more specific for creatinine and provide more reliable results. Most assays for the measurement of creatinine are run in a clinical laboratory as a diagnostic assay to distinguish diseased patients from healthy patients. The clinical laboratory assays are not designed for the quantitative accuracy that is required for drug development research or tobacco research. These clinical laboratory assays do not meet the FDA bioanalytical guidance. We at Celerion have minimized and validated a modified enzymatic method that is compliant with the FDA bioanalytical guidance. We intend to present the data on the precision, accuracy, reproducibility, and linearity of the method. We further intend to compare and contrast between the bioanalytical enzymatic method and the alkaline picrate method widely used in clinical laboratory settings.

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**POS1-127**

**POSTPARTUM DEPRESSION AND SMOKING ABSTINENCE SELF-EFFICACY**

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**BACKGROUND:** Postpartum depression (PPD) affects roughly 10-20% of women following delivery. Women with PPD experience many negative health outcomes, including nearly twice the rates of postpartum smoking relapse. Self-efficacy (SE) is considered one of the main factors predicting success of quit-smoking attempts, but few studies have examined the relationship between SE and PPD. Identifying possible contributors to low SE, such as PPD, may provide greater insight into risk factors for smoking relapse and potential areas for prepartum intervention. METHOD: Participants were 46 pregnant women, aged 18-35 who had recently quit smoking and wanted to remain smoke-free after childbirth. Edinburgh Postnatal Depression Scores (EPDS) and Smoking Abstinence Self-Efficacy Scores (SSES) were obtained prepartum at screening and baseline (gestational week 36), and postpartum during week 0 (W0), W4, and W12. Pearson correlation coefficients were used to assess the relationship between EPDS and SSES (overall and subscales) at each time point, and multiple linear regression was used to evaluate whether change in postpartum EPDS score (W12-W0) predicts SSES at W12. RESULTS: Results indicate a negative correlation between EPDS and SSES. The correlation was significant at baseline (p=0.0128, r = -0.37) and W12 (p=0.0027, r = -0.47). Between EPDS and SSES subscales, correlations were statistically significant (p<0.05) for negative affect at baseline (r = -0.36), W4 (r = -0.36), and W12 (r = 0.48), for social/positive at baseline (r = -0.29) and W12 (r = -0.41), and for habitual/craving at baseline (r = -0.35) and W12 (r = -0.35). No other significant relationships were observed. CONCLUSIONS: Our findings suggest a negative correlation between both pre- and post-partum EPDS and SSES. Ultimately, data from this and ongoing studies aim to contribute to our understanding of risk factors for postpartum smoking relapse and the development of improved interventions to reduce relapse rates.

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**POS1-128**

**SENSATION SEEKING AND REBELLIOUSNESS ASSOCIATED WITH E-CIGARETTE USE AMONG COLLEGE STUDENTS**  
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Since their introduction into the U.S. market in 2006, e-cigarette use has increased exponentially. Surveys have indicated that college students may be using e-cigarettes at higher rates than the general population. Moreover, although gender, population surveys suggest most e-cigarette users are either current or past smokers, surveys of college students have documented relatively higher rates of non-smokers using e-cigarettes. In this study, we examined a sample of non-smoking college students and explored the relationship between e-cigarette use and two personality traits associated with substance use and risk taking: sensation seeking and rebelliousness. Specifically, we hypothesized that compared to non-users, e-cigarette users would report higher rates of both rebelliousness and sensation seeking. Participants were 162 undergraduate students (106 females) at a southeastern university between the ages of 18-25 who reported smoking less than 100 cigarettes per lifetime. Participants completed self-report measures including demographics, history of tobacco/nicotine use, sensation seeking and rebelliousness. Of the 162 participants, 87 (41%) reported using an e-cigarette at least once in their lifetime and nearly a third of these e-cigarette users (n=20) denied past smoking history. As hypothesized, e-cigarette users indicated significantly higher levels of rebelliousness (Mean 12.2, SD 3.2) as compared to non-users (Mean 10.8, SD 2.9) on the Rebelliousness/Negativism-Dominance Scale (p<.01). E-cigarette users also indicated elevated level of sensation seeking (Mean 11.1, SD 1.8) relative to non-users (Mean 11.8, SD 2.9) on the Brief Sensation Seeking Scale (p<.01), a measure ranging from 8-16 with lower scores indicating greater sensation seeking. Of the 162 participants, 67 (41%) reported using an e-cigarette at least once. The successful implementation of a federal nicotine reduction policy requires a comprehensive understanding of consumer acceptance of reduced nicotine content (RNC) cigarettes. Anecdotal evidence suggests smokers dislike RNC cigarettes, yet little empirical support is available beyond negative subjective rating data. It is further unclear if subjective ratings subsequently affect acceptance of these products. This study examined the effect of stepdown and non-stepdown RNC cigarette use on study attrition – an indirect, behavioral measure of product acceptance. We further explored differences between study completers and non-completers on subjective and behavioral responses to RNCs. After completing the 5-day smoking baseline period of smoking their usual cigarette, 246 of the 314 participants (78.8%) completed the 0.05 mg cigarettes as weaker, too mild, providing less satisfaction, burning too fast in too few puffs, and having weaker smoke (p’s<0.001-0.029) compared to study completers. Results suggest that attrition disproportionately occurred during use of the lowest nicotine cigarettes. Moreover, several negative subjective ratings of the lowest RNC cigarettes were associated with attrition during subsequent use. These findings may be indicative of consumer acceptance issues with very low RNC cigarettes should a federal nicotine reduction policy be implemented.

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**POS1-130**

**UNDERSTANDING FOR WHOM TREATMENTS WORK: MODERATOR RESULTS FROM A FACTORIAL EXPERIMENT**  
Megan Piper1, Tanya Schlam1, Jessica Cook1, Stevens Smith1, Daniel Bolt1, Robin Mermelstein1, Linda Collins2, Michael Fiore3, Timothy Baker4, 1University of Wisconsin - Madison, WI, USA, 2University of Illinois - Chicago, IL, USA, 3Pennsylvania State University, PA, USA

The development of tobacco use treatments that are effective for all smokers is critical to improving clinical and public health. The Multiphase Optimization Strategy (MOST) offers a unique framework for engineering effective treatment packages by using factorial experiments to identify effective intervention components and determine which components work for which types of smokers. A fractional factorial experiment evaluated six smoking cessation interventions with components among primary care patients (N=637): Preparation Nicotine Patch vs None, Preparation Nicotine Gum vs None, Preparation Counseling vs None, Intensive Cessation In-Person Counseling vs Minimal, Intensive Cessation Telephone Counseling vs Minimal, and 15 vs 8 Weeks of Combination Nicotine Replacement (NRT). The combination of Preparation NRT and Intensive In-Person Counseling was promising but the combination of Intensive In-Person Counseling and Intensive Phone Counseling was redundant. We conducted moderation tests to determine if the effects of these component combinations on abstinence at 2, 16 and 26 weeks postquit differed as a function of person factors: gender (55% women), race (89% White), education (41% high school or less vs more than high school), and psychiatric comorbidity (41% at least one self-reported diagnosis vs none). Education moderated the In-Person Counseling x Phone Counseling and the Gum x In-Person Counseling interactions (p<.05). The combination In-Person and Phone Counseling was more effective at 2 weeks postquit for those with lower education, but less effective than either alone for participants with more education. Intensive In-Person Counseling and Preparation Gum worked well together, based on 16-week abstinence, for those with some college, but not for those with lower education attainment (p<.04). Psychiatric history moderated the effects of In-Person Counseling at 16 and 26 weeks postquit (p<.05); Intensive In-Person Counseling increased abstinence rates among participants with no psychiatric history but not among those with at least one diagnosis. Testing discrete intervention components may be critical to understanding treatment x person interactions.

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**POS1-129**

**ATTENTION DURING STEPDOWN AND NON-STEPDOWN USE OF REDUCED NICOTINE CIGARETTES: AN APPROACH TO DETERMINING PRODUCT ACCEPTANCE**  
Melissa Mercincavage*, Valentina Souprouchchouk, Kathy Tang, Andrew Strasser, University of Pennsylvania, PA, USA

The successful implementation of a federal nicotine reduction policy requires a comprehensive understanding of consumer acceptance of reduced nicotine content (RNC) cigarettes. Anecdotal evidence suggests smokers dislike RNC cigarettes, yet little empirical support is available beyond negative subjective rating data. It is further unclear if subjective ratings subsequently affect acceptance of these products. This study examined the effect of stepdown and non-stepdown RNC cigarette use on study attrition – an indirect, behavioral measure of product acceptance. We further explored differences between study completers and non-completers on subjective and behavioral responses to RNCs. After completing the 5-day smoking baseline period of smoking their usual cigarette, 246 of the 314 participants (78.8%) completed the 0.05 mg cigarettes as weaker, too mild, providing less satisfaction, burning too fast in too few puffs, and having weaker smoke (p’s<0.001-0.029) compared to study completers. Results suggest that attrition disproportionately occurred during use of the lowest nicotine cigarettes. Moreover, several negative subjective ratings of the lowest RNC cigarettes were associated with attrition during subsequent use. These findings may be indicative of consumer acceptance issues with very low RNC cigarettes should a federal nicotine reduction policy be implemented.

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**POS1-131**

**CONSISTENT PATTERNS OF DAILY SMOKING BEHAVIOR IN THE FIRST MONTH OF QUITTING EMERGE IN FOUR SMOKING CESSATION TRIALS**  
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Despite significant advances in our understanding of tobacco dependence and its treatment, we still lack detailed data regarding the processes of quitting and relapse. Latent class analysis (LCA) is a tool that can help detect common patterns of behavior and thereby illuminate smoking change processes. A recently published repeated measures latent class analysis (RMLCA) of daily smoking status (any
versus none) from a large smoking cessation pharmacotherapy clinical trial identified five latent classes of smokers and examined associations between latent class membership and both baseline individual differences and distal tobacco abstinence outcomes. The current study sought to apply the same RMLCA approach to daily smoking status from three other smoking cessation studies. Binary smoking status data from the first 27 days of the quit attempt were used as indicators of latent class. Five-class solutions fit well in all three replication datasets, despite differences in study designs and treatments. Although there were differences in latent class prevalences across studies, the latent class structure was remarkably similar across studies and included a stable early quitter class, a stable smoker class, a stable early intermittent smoker class, a relapser class, and a class with low initial abstinence probabilities that then recovered to intermittent abstinence. Relations between latent class membership and three-month biochemically verified abstinence were replicated in part. In all four studies, early quitters had the highest distal abstinence rates and those who never quit or relapsed had very low distal abstinence rates. The intermittent smoker classes had lower distal abstinence rates in the replication studies than in the original. Nicotine patch therapy and bupropion were found to influence latent class, and bupropion and counseling had interactive effects on latent class. These results suggest that there are five common patterns of smoking behavior in the first 27 days of a formal, assisted quit attempt and that these patterns are both affected by treatment and predictive of later abstinence.

Funding: The data for this study were collected as part of previously reported randomized clinical trials and cessation studies funded by National Institute on Drug Abuse grants R01DA06084 and P50DA0184724. This work was supported by National Institute on Drug Abuse Grant R01DA033303 awarded to Drs. McCarthy and Shiffman.

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POS1-132
NON-DAILY AND DAILY SMOKERS’ HEDONIC RESPONSES TO SMOKING

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BACKGROUND: About a third of US adult smokers are non-daily or intermittent smokers (ITS) whose smoking is not well understood, as their smoking patterns cannot sustain nicotine dependence. ITS may smoke for immediate reward, rather than to ward off nicotine withdrawal. Thus, unlike dependent smokers, who are thought to get little pleasure from smoking (low “liking”), despite experiencing craving (high “wanting”), ITS are expected to find smoking acutely rewarding (high “liking”) despite having little craving (low “wanting”). This study compares daily smokers (DS’) and ITS’ hedonic response to smoking, using EMA data, and also assesses whether ITS experience more aversive responses to smoking due to lower nicotine tolerance. METHODS: ITS (n=109) and DS (n=52) used electronic diaries to record every cigarette and were also prompted for assessment at random times (DS: 3,049; ITS: 7,556), at which they recorded their response to the most recent cigarette, rating (on 0-100 VAS scales) liking and satisfaction, aversive response, and the effect of smoking on relieving craving. Hierarchical linear models were used to contrast ITS and DS responses. RESULTS: DS reported greater liking and satisfaction than ITS (77.9 vs 72.2, p=.006), while ITS reported more aversive response (15.9 vs 11.6, p=.007). There were no DS/ITS differences in other responses to smoking, and no differences according to whether ITS had previously smoked daily. ITS reported lower craving than DS, both when smoking (65.7 vs 69.7) and when not smoking (26.7 vs 60.9), but ITS reported a relatively greater rise when they were about to smoke (p<.001). DISCUSSION: DS report liking smoking more than ITS do; contrary to theory, liking does not necessarily fade with extensive use or dependence. While ITS do report lower craving, the difference is relatively modest at moments of smoking. ITS report greater aversive response to smoking, consistent with lower tolerance, and suggesting that aversive responses could limit their smoking. The experience of smoking may be an important dynamic driving different smoking patterns.

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POS1-133
PERFORMANCE AND UTILITY OF WHOLE BLOOD AND ORAL FLUID POINT-OF-CARE COTININE TESTING WHEN COMPARED TO LC/MS-MS

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Point-of-care testing (POCT) for tobacco use detection via cotinine levels is widely used to strategically prioritize health risk in settings such as employee wellness events, insurance screenings and the new hire process. Two POCT methods were used to screen a population of non-tobacco and tobacco users (n=49) to determine tobacco use status. The first method (PTS Detect cotinine system) utilized whole blood to obtain a quantitative cotinine value, with a cut point of <25 ng/mL indicating a non-tobacco user. The second method (Alere iScreen) utilized oral fluid to obtain a qualitative value with a cut point of <30 ng/mL also indicating a non-tobacco user. Both were considered equivalent sources despite the higher oral fluid cut point of <30 ng/mL due to saliva cotinine levels being 1.3x higher than plasma levels. Both POCT methods exhibited a sensitivity of 97.8% and specificity of 100% compared to the LC/MS-MS methods. The main differentiator between the two POCT methods was the ability of the whole blood quantitative device to determine categorical tobacco use as effectively as the LC/MS-MS method based upon their four categories of placement. The placement categories used were <25 ng/mL indicating a non-tobacco user (category 1), 25-40 ng/mL indicating passive exposure (category 2), 41-199 ng/mL indicating light use (category 3), and >200 ng/mL indicating heavy use (category 4). The LC/MS-MS and whole blood POCT method respectively placed individuals in category 1: 3 and 4, category 2: 4 and 4, category 3: 22 and 19, and category 4: 20 and 22. The performance of the PTS Detect cotinine device in classifying individual tobacco use showed significant correlation compared to LC/MS-MS. Additionally, while the sensitivity and specificity of the whole blood and oral methods were the same, the quantitative POCT method demonstrated greater utility for the applications examined by providing a definitive value for cotinine. A categorical determination of tobacco use at the point-of-care within 5 minutes, thereby reducing the need for confirmation testing that may be required when using a qualitative method, such as the oral fluid method examined.

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POS1-134
IS A QUIT ATTEMPT IN THE PAST 12-MONTHS A NECESSARY COMPONENT OF THE PREPARATION STAGE OF CHANGE?

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BACKGROUND: The Preparation stage of change, widely accepted as an important component of successful cessation, has two criteria: wanting to quit in the next 30 days, and a quit attempt in the last 12 months. In this analysis we were interested in assessing the relative importance of each of these criteria as predictors of abstinence at 6-months following enrollment in a smoking cessation program. HYPOTHESIS: We hypothesized that the group meeting both criteria (i.e. Preparers) would have higher abstinence rates compared to those only meeting one criterion or none (i.e. Contemplators). METHODS: The sample consisted of 14,115 participants who enrolled in a smoking cessation program (consisting of up to 26 weeks of NRT and behavioral counseling at no cost), through their primary care provider between July 2011 and June 2014 and responded to the 6-month follow up survey. Chi-square tests with Yates correction were conducted to analyze between group differences in 7-day point prevalence abstinence (PPA) at 6-months. RESULTS: Of the 6,722 Preparers, 2,353 (35%) reported being ab- stinent at 6-months compared to 33.4% (2469/7393) of Contemplators (Chisquare = 3.98, p<0.05). To further explore the relative importance of either an intention to quit within 30-days or a past 12-month quit attempt, the contemplator group was further divided. Those who answered No to both questions (n=772), had a 7-day PPA of 20.9%, significantly lower than Preparers (Chisquare = 61.5, p<0.0001), but similar to those with a past 12-month quit attempt but no 30-day intention to quit (n=637, 7-day PPA = 20.5%). Those with a 30-day intention to quit but no quit attempt in the past 12-months (n=6,084) had a similar 7-day PPA as Preparers (36.1% vs 35%, Chisquare=1.71, p=0.19). Conclusions: Having a quit date within
POS1-135
CONSTRUCTING AND EVALUATING A UNIVERSAL E-CIGARETTE VAPING BEHAVIOR RECORDER (VBR) PROTOTYPE
Bartosz Koszowski1, Wallace Pickworth1, Donald McGonigle2, Vladimir Mikheev1, Marielle Brinkman1, Alieu Kanu1, Jennifer Tobe2, Raymond Zaboriski2, Meridith Thanner1, Carson Smith1, 1Battelle Memorial Institute, Battelle Public Health Center for Tobacco Research, MD, USA, 2Battelle Memorial Institute, Advanced Analytics & Health Research, MD, USA

The harms and benefits associated with e-cigarette use has become a public health and regulatory priority. Recording vaping topography: number of puffs, puff durations, inter-puff intervals (IPI) and time-of-day for each vape, is an effective approach to estimate toxin exposure (e.g. nicotine) from e-cigarette aerosols. Currently, commercial combustible cigarette topography devices are ill-equipped to assess vaping topography outside of a laboratory setting. To fill this gap, we designed, constructed, and evaluated a Vaping Behavior Recorder (VBR) prototype that will assess vaping behavior in a natural setting. VBR uses sensors (light, pressure transducer and switch) to conveniently record vaping topography from the exterior of the e-cigarette. Analog signals from the sensors are digitized by a prototype board that attaches to a data acquisition device. The VBR prototype may be used with a wide variety of commercially available e-cigarette models to conveniently record vaping topography from the exterior of the e-cigarette

Funding: The STOP Program from which the data presented were obtained is funded by the Ontario Ministry of Health.

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POS1-137
SUBJECTIVE EFFECTS OF SMOKING AMONG OPIOID-MAINTAINED INDIVIDUALS: RESULTS FROM A PILOT STUDY EXAMINING REDUCED NICOTINE CONTENT CIGARETTES
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INTRODUCTION: Smoking prevalence among opioid-dependent individuals is four-fold that of the general population. The possibility of heightened sensitivity to nicotine reinforcement in opioid-dependent smokers has implications for efforts to evaluate very low nicotine content (VLNC) cigarettes in this group. Using data from a recent pilot study, we compared the subjective effects of research cigarettes with varying nicotine yields (0.03, 0.12, 0.26, 0.80 mg) and usual brand cigarettes between opioid-dependent vs. nondependent smokers. METHODS: Participants were 26 adult smokers from vulnerable populations (i.e., economically disadvantaged women (n=9), methadone- and buprenorphine-maintained patients (n=17), individuals with affective disorders (n=6)). Participants were dichotomized as those with (n=11) or without (n=15) current opioid dependence. Participants completed 5 outpatient lab sessions wherein they smoked 1 of 4 research cigarettes (0.03, 0.12, 0.26, 0.80 mg) or their usual brand cigarette under double-blind and acute abstinence conditions. After each cigarette, participants completed the modified Cigarette Evaluation Scale (mCES) to assess positive and negative subjective effects of the cigarette smoked. Subjective effects for opioid-dependent and non-dependent smokers were compared at each dose using mixed model repeated measures ANOVAs. RESULTS: Opioid-dependent smokers reported significantly higher scores at some dose on 4 of the 5 mCES scales: Satisfaction (MDiff=1.82, p<.02) and Enjoyment of Respiratory Tract Sensations (MDiff=1.76, p=.01) following the 0.12 mg cigarette, and Psychological Reward (MDiff=1.38, p<.05) and Craving Reduction (MDiff=1.56, p<.05) following the 0.80 mg cigarette. In contrast, the two groups did not differ on the Aversion scale of the mCES at any dose. Conclusions: Opioid-dependent compared to nondependent smokers may experience greater positive subjective response to cigarettes across a range of nicotine doses, including reduced (e.g., 0.12 mg) nicotine levels, suggesting acceptability of reduced nicotine cigarettes by this population.

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POS1-136
REACTIVITY TO SIMULATED SOCIAL REJECTION PREDICTS URGE TO SMOKE DURING ABSTINENCE IN A LABORATORY SETTING
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BACKGROUND: Epidemiological evidence indicates that smokers with trait socioemotional processing disturbances (e.g., those who are sensitive to social rejection) are more likely to relapse and maintain smoking. Here, we analyze a subset of data from an investigation of dual use of combustible and electronic cigarettes to examine the relationship between reactivity to simulated social rejection and subsequent self-reported cigarette withdrawal and smoking urge. METHODS: Non-treatment-seeking smokers (N=21) completed 5 laboratory sessions: a baseline session following ad libitum smoking and 4 subsequent sessions following 16-hour smoking abstinence. During the baseline session, participants completed a computerized task ("Cyberball"), which assesses self-reported self-esteem following simulated social acceptance and rejection. At the start of each abstinence session, participants completed the Minnesota Nicotine Withdrawal Scale (MNWS) and the Questionnaire of Smoking Urges (OSU), which measures two aspects of smoking urge: desire for positive smoking effects (F1) and desire for relief from withdrawal symptoms (F2). We evaluated the association between reactivity to social rejection and withdrawal and smoking urge, while controlling for nicotine dependence. RESULTS: During the baseline session, participants reported lower- self-esteem following social rejection compared to social acceptance (Q2O=5; p<.001), indicating that the Cyberball manipulation was successful. Additionally, across all abstinence sessions, reactivity to social rejection was positively related to smoking urge (OSU F1; beta=.33; p<.05) but not to withdrawal. CONCLUSION: Consistent with previous epidemiological research, greater reactivity to social rejection was associated with cigarette smoking urge, specifically the desire to experience the acute positive effects of smoking. These data suggest that socioemotional functioning may be an important contributor to smoking maintenance and relapse, and thus could be a target for smoking cessation treatment development. Future laboratory research should examine the relationship between reactivity to social rejection and smoking lapse.

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30-days of enrolling in a smoking cessation program is highly significantly associated with abstinence at 6-months. Also having a quit attempt in the past 12-months did not significantly alter this association and as such may not be a necessary component of the preparation stage of change. Further analysis of moderators and confounders of this effect will be presented.

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POS1-138
PSYCHOLOGICAL WELL-BEING AND SMOKING DEPENDENCE: CROSS-SECTIONAL CORRELATIONS
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INTRODUCTION: The relationship between smoking dependence and poor mental health (e.g., major depressive disorder, neuroticism) is well established. However, little is known about smoking and psychological well-being (PWB; e.g., optimism, resilience). PWB, more than simply the absence of poor mental health, contributes to a fulfilling life and promotes improved health outcomes (e.g., reduced likelihood of stroke). Understanding associations between PWB and smoking dependence is a necessary precursor to testing a cessation intervention that boosts PWB.

METHODOLOGY: Using data from a pilot study of acute withdrawal exposure therapy (Hendricks, et al., forthcoming), 80 smokers completed baseline measures of dependence and PWB. Dependence measures included: Fagerstrom Test for Cigarette Dependence (FTCD), Wisconsin Inventory of Smoking Dependence Motives (WISDM-68), Brief Resilience Scale (BRSQ) a six-item measure of one’s ability to recover from setbacks. RESULTS: Greater optimism assessed by the LOTR was positively associated with dependence measured by the FTCD (r = .25, p < .05) and negatively associated with abstinence self-efficacy (TAA, r = .31, p < .05). Greater resilience assessed by the BRSQ was negatively associated with dependence measured by the WISDM68 (r = .33, p < .01). Base-line motivation to quit (TAA) was positively associated with optimism measured by the ASQ (r = .29, p < .05) but negatively associated with optimism measured by the LOTR (r = .28, p < .05). Mean ARME score was positively associated with optimism assessed by the ASQ (r = .32, p < .01) and resilience on the BRSQ (r = .33, p < .01), but negatively associated with optimism on the LOTR (r = .30, p < .01). CONCLUSIONS: Smokers exhibit characteristics of PWB that may enhance motivation and foster quitting. However, some aspects of PWB may generate unrealistic expectations of quitting difficulty.

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POS1-139
PUFF TOPOGRAPHY AND CARBON MONOXIDE EXPOSURE COMPARISONS IN CIGARETTE AND LITTLE CIGAR SMOKING
Chad Reissig1, Wallace Pickworth2, Jennifer Potts2, Lauren Viray2, Zachary Hendricks, et al., forthcoming), 80 smokers completed baseline measures of dependence and PWB. Dependence measures included: Fagerstrom Test for Cigarette Dependence (FTCD), Wisconsin Inventory of Smoking Dependence Motives (WISDM-68), Abstinence-Related Motivational Engagement score (ARME), and the Thoughts About Abstinence scale (TAA). PWB measures included: the Life Orientation Test-Revised (LOTR) a measure of dispositional optimism, the Attributional Style Questionnaire (ASQ) a measure of one’s optimistic/pessimistic style for explaining personal problems, and the Brief Resilience Scale (BRSQ) a six-item measure of one’s ability to recover from setbacks. RESULTS: Greater optimism assessed by the LOTR was positively associated with dependence measured by the FTCD (r = .25, p < .05) and negatively associated with abstinence self-efficacy (TAA, r = .31, p < .05). Greater resilience assessed by the BRSQ was negatively associated with dependence measured by the WISDM68 (r = .33, p < .01). Base-line motivation to quit (TAA) was positively associated with optimism measured by the ASQ (r = .29, p < .05) but negatively associated with optimism measured by the LOTR (r = .28, p < .05). Mean ARME score was positively associated with optimism assessed by the ASQ (r = .32, p < .01) and resilience on the BRSQ (r = .33, p < .01), but negatively associated with optimism on the LOTR (r = .30, p < .01). CONCLUSIONS: Smokers exhibit characteristics of PWB that may enhance motivation and foster quitting. However, some aspects of PWB may generate unrealistic expectations of quitting difficulty.

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POS1-140
IT’S NOT JUST FORGETTING: ASSESSING HISTORY OF MEDICATION ADHERENCE TO TAILOR STRATEGIES TO PROMOTE ADHERENCE
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Medication nonadherence has been a troublesome issue in conducting pharmacotherapy trials. Adequate adherence is critical to assessing the efficacy of a pharmacotherapy with adequate power and studies often fall short. Effective tools are needed to screen participants at risk for adherence lapses and develop strategies to improve medication adherence. Most adherence counseling approaches emphasize techniques to help participants remember to take their medications, such as including reminders and developing a routine for taking medication. However, our prior research suggests that forgetting may not be the major contributor to nonadherence. Instead, intentional nonadherence (i.e., stopping the medication when feeling better or when feeling worse) is more predictive of nonadherence and poor outcomes than unintentional nonadherence. Recognizing this finding, we sought to develop a behavioral intervention to support medication adherence that is informed by historical patterns of medication adherence. This intervention is being used in the ADVANCE Study, a 2-site study testing the efficacy of Varenicline for alcohol and smoking reduction in alcohol dependent smokers. To address problems with nonadherence, we added the 4-item Medication Adherence Questionnaire (MAQ) to assess history of medication adherence patterns prior to treatment. Using intake results from the MAQ, the prescriber provides feedback about prior adherence patterns and works collaboratively with the participant to devise detailed plans to sustain or enhance medication adherence. For example, to address intentional nonadherence issues such as feeling worse after taking the medication, participants are encouraged to alert the provider to any side effects so that dose reductions can be made as needed. In subsequent sessions, the initial scores on the MAQ are reviewed to support, modify, and/or problem solve difficulties in medication adherence. Like participants in our prior bupropion trial (Toll et al, 2007), initial analyses confirm that intentional nonadherence is more common than unintentional nonadherence. Data on the first 89 participants showed that the proportion reporting prior nonadherence on each of the four MAQ items was as follows: forgetting (19.1%), being careless (11.2%), stopping medication when feeling better (22%) and stopping medication when feeling worse (40.7%). The final sample of 129 has completed treatment and will be the basis of this presentation. The proposed poster will focus on the adherence counseling component devised in the ADVANCE study. We will describe patterns of medication adherence at intake, and strategies that have been effectively employed to address different aspects of intentional nonadherence (e.g., adverse events, beliefs about the medication) and the normalized eCO levels of smokers who used tobacco products. Further investigation is warranted.

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POS1-141

GUIDED SMOKING CESSATION TREATMENT PLAN USING EXHALED CARBON MONOXIDE LEVELS AT ONE WEEK POST TARGET QUIT DAY

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BACKGROUND: Recent studies have suggested that lower exhaled carbon monoxide (CO) levels early in treatment predict future tobacco abstinence. Those with higher CO levels of ≥7 at one week post-Target Quit Day (TQD) may benefit from more intensive treatments to enhance treatment compliance. DESIGN: Observational study within a randomized controlled trial. SETTING: Outpatient medical practices in Hershey PA area. OBJECTIVE: To assess the predictive value of exhaled CO levels at one week and their potential role as a guide to treatment.

METHODS: Participants were 225 smokers of a Randomized Controlled Trial who smoked >4 cigarettes per day, aged ≥21 years and willing to make a quit attempt in the next 30 days. At initial assessment all participants had exhaled CO measured weekly. Smokers were randomized to Target Quit Day (TQD) being the second group session. At each visit, self-report of past week smoking status was taken in addition to a CO measurement. Participants were provided with transdermal nicotine patches and followed up one month after the TQD. The primary outcome measure was 7-day point prevalence tobacco abstinence, biochemically-confirmed by CO<10ppm. RESULTS: Of those with CO 0-6 at one week post-TQD, 30.3% had a slip or relapse to smoking by the one month follow-up. In the CO >7, 55.6% reported slip and followed up one month after the TQD. The primary outcome measure was 7-day point prevalence tobacco abstinence, biochemically-confirmed by CO<10ppm. CONCLUSION: Actionable items that affect treatment plan may be determined by CO levels. Those with exhaled CO ≥7 at one week post-TQD report more slips, lower patch use, and relapse to smoking at 28 days after TQD. This group may benefit from additional counseling and encouragement to adhere to treatment protocols.

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POS1-142

MALLEABILITY OF DISTRESS INTOLERANCE DURING SMOKING CESSATION TREATMENT

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BACKGROUND: Distress intolerance, one’s perceived or objective inability to withstand aversive psychological or physiological states, is a key vulnerability factor associated with smoking maintenance. Data indicate that high-distress intolerant smokers are more likely to lapse during a self-guided quit attempt, and smoking cessation treatments designed to increase distress tolerance as compared to standard treatment, result in improved abstinence outcomes, and greater reductions in negative affect and nicotine withdrawal symptom severity. Despite these important outcomes, the malleability of this construct has yet to be empirically tested. The aim of the present study was to examine the effect of two smoking cessation interventions on changes in distress intolerance (measures via self-report and behaviorally) during treatment. METHOD: Treatment-seeking smokers (n = 232; Mean age = 39.0, SD = 13.2; 48.1% female) were randomly assigned to one of two 4-session smoking cessation treatment programs: (1) Standard Cessation Program (SCP) or (2) Smoking Termination/Aversion Management Program (STAMP), which included use of interoceptive exposure and planned periods of nicotine deprivation prior to quitting to address maladaptive cognitions related anxiety and ability to quit smoking. Distress intolerance was assessed pre-quit (baseline) and weekly at each treatment session, via the Discomfort Intolerance Scale (DIS; higher scores indicated more intolerance for distress) and Breath Holding Duration Task (BH; shorter durations indicate more intolerance for distress). Results: Multi-level modeling (MLM) was conducted using SAS PROC MIXED to test the effect of treatment condition, time, and their interaction in predicting changes in DIS and BH. Results indicated smokers who received STAMP reported a significant reduction in DIS scores and increases in BH duration over time, whereas non-significant changes were observed for the SCP group. DISCUSSION: Future work should expand upon these models to identify whether reductions in distress intolerance during treatment are clinically meaningful in terms of predicting smoking and affective outcomes following quit attempt.

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POS1-143

DESIGN AND IMPLEMENTATION OF DECISION SUPPORT FOR TOBACCO DEPENDENCE TREATMENT IN AN INPATIENT ELECTRONIC MEDICAL RECORD

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BACKGROUND: Tobacco dependence treatment for hospitalized smokers results in lower cessation if treatment continues at least 30 days post-discharge. Methods to leverage inpatient interventions into post-hospitalization care are unclear, and health information technology may facilitate ongoing treatment. OBJECTIVE: To develop and test an order set and best practice alert (BPA) addressing tobacco dependence treatment for hospitalized smokers embedded in an electronic health record (EHR). METHODS: In a cluster-randomized trial, 250 physicians were randomized (1:1) to either receive or not receive a BPA with an order set. The BPA and order set were developed and embedded in the Epic (Madison, WI) EHR used at 2 hospitals in a single city. When an adult patient is admitted to a medical service, a BPA fires if the patient is coded in the EHR as a smoker. For physicians randomized to the intervention, the BPA offers to take the physician to an order set to prescribe tobacco treatment medications and refer the patient to the state smokers’ quiline. Additionally, “tobacco use disorder” is added to the patient’s problem list, and an email is sent to the patient’s primary care provider (PCP). In the control arm, a BPA silently fires with no additional actions offered for the physician. Generalized estimating equations were used to model the data. RESULTS: Since August 2013, the BPA fired for 8519 patients (4184 intervention, 4355 control). Compared to control arm physicians, intervention physicians were more likely to order tobacco treatment medication (35% v. 29%, P<0.0007), populate the problem list with tobacco use disorder (41% v. 2%, P<0.0001), and make a referral to the state smokers’ quiline (30% v. 0%, P<0.0001). In addition, intervention physicians sent an email to the patient’s PCP 4152 (99%) times. CONCLUSION: Designing and implementing an order set and BPA for tobacco treatment in an EHR is feasible and acceptable, and results in an increase in physician orders for tobacco treatment medication, referrals to the state smokers’ quiline, and email to patients’ PCP. Data on cessation outcomes are pending.

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POS1-144
BEHAVIORAL ECONOMIC SUBSTITUTION BETWEEN CIGARETTES AND E-CIGARETTES ASSOCIATED WITH FREQUENCY OF USE
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Models measuring the interactions between consumption of e-cigarettes and tobacco products in the marketplace are becoming vital prediction tools as the popularity of electronic cigarettes increases and policy on tobacco products changes. Behavioral economics, the integration of psychology and consumer demand, can be used to measure individuals’ purchase behavior under different marketplace conditions. Our goal was to measure hypothetical cigarette and e-cigarette purchasing among smokers with varying frequencies of e-cigarette use. Daily cigarette smokers were recruited using Amazon Mechanical Turk, an online crowdsourcing tool. Participants were asked about their frequency of e-cigarette use and to complete a hypothetical cross-commodity purchase task. The purchase task required input of the number of cigarettes and e-cigarettes hypothetically purchased when the two were concurrently available. In each trial the price of individual cigarettes increased ($0, 0.12, 0.25, 0.50, 1.00), while e-cigarette price ($7.73) remained fixed. Participants were grouped based on their frequency of reported e-cigarette use. Consumer demand for cigarettes decreased disproportionately with increasing cigarette prices and by reported frequency of using e-cigarettes. That is, daily e-cigarette users produced the most elastic demand for cigarettes compared to less frequent e-cigarette users. Simultaneously, daily e-cigarette users purchased more e-cigarettes compared to less frequent users when cigarette prices were low, but as cigarette prices increased, e-cigarettes served as a substitute for conventional cigarettes in all frequency groups. Together, these data suggest that cigarette prices and frequency of e-cigarette use alters purchasing of both cigarettes and e-cigarettes when available concurrently. The price differential between conventional cigarettes and e-cigarettes may be an influential factor in defining how both products are used.

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POS1-145
SMOKING AS A CHRONIC HEALTH CONDITION: A RCT COMPARING FOUR EXTENDED SMOKING TREATMENT INTERVENTIONS IN A DEMOGRAPHICALLY DIVERSE SAMPLE
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Based on a chronic disorder model of cigarette smoking, we have conducted a series of studies evaluating a 52-week cognitive-behavioral relapse prevention (RP) intervention. Findings from this work suggest that RP treatment can produce high cessation rates that are maintained at a two year follow-up. The aim of the current work was to: a) determine whether the observed high abstinence rates are due to the content of the RP treatment or due to extended therapeutic support, and b) to determine whether the addition of extended medication to the RP condition effects abstinence rates. Participants (N=216) initially received 12 weeks of varenicline and counseling. Participants were then randomly assigned to one of four experimental conditions during the 40 week extended treatment period. Conditions were: (1) 11 individual RP counseling sessions + ongoing varenicline treatment; (2) 11 individual RP counseling sessions; (3) 11 individual Health Education (HE) counseling sessions (Attentional Control for RP); and (4) 11 Brief Monthly (BM) check-ins with a nurse practitioner. Smoking status was assessed at weeks 12, 24, 52, 64, and 104 following treatment initiation. The sample is demographically diverse: 61% male, 50% Caucasian, and 26% identify as LGBT. Mean age is 49. Half are employed and 24% live in unstable housing situations. Overall, abstinence rates were 45%, 42%, 39%, 39% and 39%, at weeks 12, 24, 52, 64 and 104 respectively. Preliminary analyses indicate no significant differences in outcome when comparing the RP condition to the HE condition. However, the RP plus extended varenicline treatment condition resulted in significantly higher abstinence rates when compared to the other treatments (OR 1.77, CI 1.27 – 2.48). Variables positively associated with outcome were employment, education, and income. Variables negatively associated with outcome were cigarettes per day, mood score, and menthol use. These preliminary findings suggest that cessation may be maintained through various means of ongoing psychosocial support. Also, adding extended pharmacological treatment to psychosocial support can significantly increase long-term abstinence rates.

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POS1-146
THRESHOLD DOSE FOR DISCRIMINATION OF CIGARETTE NICOTINE CONTENT
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The lowest nicotine threshold “dose” reliably discriminated from a “placebo” may help inform the minimum dose that can maintain tobacco dependence. Spectrum research cigarettes (NIDA) differing in nicotine content were used to determine discrimination thresholds in 18 (13 M, 5 F) adult dependent smokers able to learn the initial discrimination. Procedures were adapted from the only prior study in humans of nicotine discrimination threshold dose via nasal spray (Perkins et al., Psychopharmacol 2001; 155: 163-170). Progressively, lower nicotine contents of about 16, 11, 4.6, 2, and 1 mg/g (corresponding to 0.76, 0.73, 0.23, 0.11, and 0.06 mg yields by FTC method) were separately compared, one per session, for ability to discriminate from the “placebo” of 0.3 mg/g (0.03 mg yield; all had 9 mg “tar”). All subjects were abstinent overnight prior to each session, and number of sessions was determined by success of discrimination behavior. Cigarettes were presented in random order, once per 15 min trial, and identified by letter code (e.g. “A” or “B”) during initial “training” trials. Then, subjects engaged in 6 “testing” trials to assess acquisition of discrimination, defined by correct identification on > 80% of trials (i.e. 5 out of 6). Each correct was reinforced by $1 to standardize subject motivation, and smoke intake was standardized at 4 puffs via Cress. Subsequent sessions involved training and testing trials with the next lower nicotine content cigarette versus “placebo”. The threshold dose was identified as the lowest nicotine content (dose) the subject was able to reliably discriminate from “placebo” after failing to discriminate the next lowest (“subthreshold”) dose from “placebo” (0.3 mg/g) on each of two sessions (for reliable assessment). Results showed a median threshold dose of 11 mg/g for the entire sample of 18, and 4.6 mg/g for 3 subjects and 2 mg/g for another 3. As expected, we also found greater subjective responses to the threshold vs. subthreshold dose, relative to “placebo”, F (8,10)=11.4, p<.001 in MANOVA. Thus, cigarette nicotine content discriminable from “placebo” may be 11 mg/g for most smokers, although 4.6 or 2 mg/g for others. Yet, Spectrum cigarettes with contents intermediate between 4.6 and 11 mg/g (and matched on tar) may be needed to clarify true thresholds for discrimination of nicotine via cigarette smoking.

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POS1-147
GENDER DIFFERENCES IN ALLOPREGNANOLONE AND SMOKING SEVERITY
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Preclinical and clinical research suggests allopregnanolone (ALLO), a neuroactive steroid and metabolite of progesterone, plays a role in drug abuse. Specifically, increased physiological levels of ALLO reduced drug-seeking behavior and withdrawal effects in animal models of addiction, with females demonstrating greater sensitivity to ALLO’s effects than males. Further, in male-only clinical samples, ALLO was positively associated with cotinine, suggesting ALLO may influence smoking-related behavior or vice versa. However, it is unknown if the sex-specific effects of ALLO demonstrated in preclinical studies extend to smoking characteristics clinical samples. Thus, the goal of this project is to explore gender differences in the association of ALLO and smoking characteristics. Participants were men and women (free-cycling in the follicular phase) between the ages of 18 and 40 who smoked ≥5 cigarettes per day (CFD); were motivated to quit smoking and were attending a screening visit for a larger cessation trial. Participants provided the following: self-report measures of smoking behavior and dependence (e.g.,
POS1-148
SMOKE EXPOSURE FROM SPECTRUM RESEARCH CIGARETTES WITH VARYING NICOTINE CONTENT

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BACKGROUND: Smoking behavior associated with switching between cigarettes with different nicotine yields is not well understood. Spectrum research cigarettes, which allow for manipulation of nicotine yield, may be a valuable tool for addressing this question. METHODS: Smoking quantity and topography were assessed in 9 adult daily smokers (2 females; mean age 46). For the first week subjects smoked their usual brand. After this they transitioned to 2 weeks of Spectrum cigarettes with nicotine yield varied biweekly in the following order: Medium (0.73 mg), High (1.72mg), Medium (0.73 mg), and Low (0.24 mg). The topography was recorded daily using a CRESS portable smoking device. RESULTS: Switching from Medium to High nicotine cigarettes led to a 13% decrease in total smoke volume per day (L) (mean ± SD, 13.0±8.9 vs. 11.3±7.5, p<0.05). This change was primarily attributed to a 15% decrease in cigarettes per day (CPD) (17.1±8.4 vs. 14.5±7.4, p<0.05) as there was little difference in mean smoke volume (mL) per cigarette (70±171 vs. 692±153, ns). In contrast, negligible changes were seen in total smoke volume per day (L) after switching from Medium to Low nicotine cigarettes (12.4±10.5 vs. 12.1±8.3, ns). After transitioning to lower yield cigarettes, mean CPD increased by 14% (15.9±9.8 vs. 18.2±11.2, ns) but a 20% reduction of smoke volume per cigarette (696±179 vs. 556±141, p<0.05) diminished the effect of increased CPD on daily smoke exposure. Laboratory assessment using a smoke machine indicated that at typical smoking conditions Low nicotine cigarettes produced 19±5% (p<0.01) smaller maximal smoke volume per cigarette than Medium cigarettes.

CONCLUSION: Smokers partially compensate for high nicotine yield primarily by reducing CPD. However, on the group level no compensation was observed when switching to Low nicotine cigarettes. This is because the effects of a treatment package may reflect the main effects of a component along with its interactions with other package components. In contrast, recent treatment development research using the Multiphase Optimization Strategy (MOST) allows the evaluation of discrete component effects via the use of factorial experiments. We report on a fraction of smokers that quit a 2 year systematic review and meta-analysis of putative mechanisms. In sum, factorial experiments can detect discrete intervention component effects on putative treatment mechanisms. Such information, along with mediational analyses, can inform the development of an optimal smoking cessation treatment package in which each component exerts complementary effects on treatment mechanisms.

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POS1-149
UNDERSTANDING HOW CESSATION TREATMENTS WORK: EFFECTS ON PUTATIVE MECHANISMS IN A FACTORIAL EXPERIMENT

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Smoking cessation treatment research has focused primarily on evaluating treatment packages (e.g., medication + counseling + pamphlets vs placebo + counseling + pamphlets) using randomized controlled trials (RCTs). However, RCTs do not permit the evaluation of the main effects of discrete intervention components (e.g., effects on putative mechanisms). This is because the effects of a treatment package may reflect the main effects of a component along with its interactions with other package components. In contrast, recent treatment development research using the Multiphase Optimization Strategy (MOST) allows the evaluation of discrete component effects via the use of factorial experiments. We report on a fraction of smokers that quit a 2 year systematic review and meta-analysis of putative mechanisms. In sum, factorial experiments can detect discrete intervention component effects on putative treatment mechanisms. Such information, along with mediational analyses, can inform the development of an optimal smoking cessation treatment package in which each component exerts complementary effects on treatment mechanisms.

INTRODUCTION: A 2006 joint statement of a panel convened by the American College of Emergency Physicians called on emergency care providers to screen and assess all patients for readiness to quit. A 2012 systematic review and meta-analysis of RCTs examining the efficacy of ETC METHODS: In May 2015 and following the PRISMA statement, 7 electronic databases were searched using predefined search terms. Outcome was the number of abstinent smokers at each follow-up time. Relative benefit (RB) of ETC on point prevalence abstinence was
calculated separately for each study and follow-up time and, pooled at different follow-up times, by Mantel-Haenszel relative risks. The effects of ETC on combined point prevalence abstinence across all follow-up times were calculated using generalized linear mixed models. RESULTS: The literature search identified 3 studies (1 abstract) out of 3723 records published since October 2010 with a total of 1054 participants. Follow-up time varied between 1 and 12 months and the rate of abstinence smokers varied between 4.5% and 26.9%. Pooling these 3 studies with the 7 studies retrieved by October 2010, the strongest effect of ETC on point prevalence abstinence was found at one month: RB = 1.49 (95% confidence interval (CI): 1.08 to 2.05), 3 studies, while the effect at 3, 6, and 12 months was RB=1.44 (95% CI: 1.14 to 1.82), 8 studies; RB=1.09 (95% CI: 0.84 to 1.41), 5 studies; and RB=1.26 (95% CI: 1.00 to 1.59), 3 studies, respectively. The effect on combined point prevalence abstinence was RB = 1.44 (95% CI: 1.05 to 1.97), p = 0.027, 10 studies. CONCLUSIONS: Emergency Department-initiated Tobacco Control is effective in promoting tobacco abstinence up to 12 months. Although there seems to be a decreasing effect over time, ETC may play a crucial role in public health strategies because of the high reach of smokers in the ED.

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POS1-151
NON-NICOTINE ELECTRONIC CIGARETTES REDUCE CUE- AND WITHDRAWAL-INDUCED CRAVING IN DAILY DEPENDENT SMOKERS
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Some studies suggest electronic cigarettes (e-cigs) may decrease cigarette craving and withdrawal symptoms. The aim of this Latin-Square randomized, single-blind, within-subject study was to evaluate the efficacy of non-nicotinc e-cigs in reducing craving in daily dependent smokers with no previous e-cig experience. The QSU-Brief was used to assess subjective craving under four experimental conditions: smoking tobacco cigarettes, using e-cigs concurrently with nicotine or placebo lozenges, and using nicotine lozenges alone. The study consisted of four 4-hour visits and one experimental condition was administered per visit. Participants arrived overnight smoking abstinence and used assigned conditions for 5 minutes. Video recordings were collected for smoking topography analysis. After neutral and smoking cues presentations 1 and 3 hours post-condition, participants completed questionnaires to assess cue- and withdrawal-induced cravings. Forty-one participants (19M:22F, age=35.2±11.0, CPD=19.7±8.2, FTND=4.3±2.0) completed the study. Compared to smoking tobacco cigarettes, significantly more puffs were taken and longer puff duration and IPI were observed during both e-cig conditions (p<0.0005). Compared to baseline, all conditions significantly reduced craving after neutral cues 1h post-condition. Significant cue and withdrawal-induced and end-of-visit cravings were found across all conditions. End-of-visit cravings were comparable to baseline. Smoking tobacco cigarettes produced greatest acute craving reduction (p<0.0005) but was least effective in maintaining this reduction following smoking cues and over the course of the experimental session. Using e-cigs with nicotine lozenges best attenuated induced cravings and resulted in significantly lower cue (p<0.01) and withdrawal-induced (p<0.05) craving compared to smoking tobacco cigarettes. Using e-cigs with placebo lozenges and nicotine lozenges also better attenuated induced cravings than smoking tobacco cigarettes. E-cigs reduced craving regardless of concurrent nicotine administration. Further research is needed to evaluate efficacy of non-nicotinic e-cigs as harm reduction and cessation aids.

Funding: This study was funded by the Health Services Research Fund of the Ontario Ministry of Health

POS1-152
USER EXPERIENCE EVALUATION OF A SMOKING CESSATION APP IN PEOPLE WITH SERIOUS MENTAL ILLNESS
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INTRODUCTION: People with serious mental illnesses (SMI) face many tobacco-related health disparities and smoke at disproportionately higher rates compared to the general population. Mobile health technologies (i.e. smartphone apps), through its wide reach and ability to disseminate evidence-based treatments, can potentially mitigate this problem. Yet, no smartphone apps have been developed specifically for this population. This study examines both the usability and psychological experience of a smoking cessation app for the general population (NCI QuitPal), in a sample of individuals with SMI that will inform the development of future smoking cessation apps tailored to this population. METHODS: The results of our study were informed by 240 hours of field experience with NCI QuitPal and 10 hours of recorded interviews and task performances in 5 adult smokers recruited from community mental health clinic. App performance, self-reports, usage logs and interview data were triangulated to identify critical usability errors and user experience (UX) themes specific to this population. RESULTS: Our results indicate that QuitPal had below average usability (Mean = 65.5; SD = 18.6), long task performance times (Mean = 4.5 min; SD = 2.69), and required considerable amounts of guidance. Common themes in user feedback after app usage include a preference for more incremental rewards, a focus on the process of quitting rather than immediate cessation, inclusion of psychological skills to quit smoking, interactive gamification, and a motivating reward system. Some barriers to app use include lack of familiarity with technology, limited fine motor skills, and difficulty with saving information in the app. CONCLUSION: This is the first study to examine the UX of a smoking cessation app amongst people with SMI. Results from this study provide user centered design data on how to develop engaging and effective smoking cessation apps tailored to this highly nicotine dependent yet underserved population.

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POS1-153
DEVELOPMENT AND INITIAL VALIDATION OF THE CESSATION FATIGUE SCALE
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Smoking cessation fatigue, or tiredness of trying to quit smoking, has been posited as a latent construct encompassing loss of motivation, loss of hope in cessation success, decreased self-efficacy, and exhaustion of self-control resources. Only one study has empirically examined cessation fatigue, with results indicating that cessation fatigue predicted relapse and was ameliorated by cessation mediators. Despite the potential clinical impact of characterizing cessation fatigue, there is currently no validated assessment of this construct. In the current study, we used a rational scale development approach to create a cessation fatigue measure and examined its reliability. We also tested its construct validity in relation to 1) smokers’ experience of a recently failed quit attempt (QA) and 2) readiness to engage in a subsequent QA. We hypothesized higher cessation fatigue would be associated with greater difficulty quitting (e.g., higher withdrawal duration), as well as lower self-efficacy and intentions to re-engage in a QA. Data were drawn from an online cross-sectional survey of 484 smokers who relapsed from a QA within the past 30 days. The sample was 59% female, with an average age of 47.4±11.8 and pre-quit smoking rate of 18.2±9.3 CPD. Exploratory factor analysis identified three factors within the 17-item Cessation Fatigue Scale (CFS), which we labeled: negative emotions, hopelessness, and lack of value of quitting. High internal consistency was observed for each factor (αs=.78-.86) and across the full scale (α=.81). As expected, CFS average score was positively associated with withdrawal severity (r=.55; p<.001), difficulty quitting (r=.32; p<.001), which likely accounted for negative associations with length of most recent QA (r=-.09; p=.04), CFS was negatively associated with previously validated measures of self-efficacy (r=-.49; p<.001), abstinence-related motivational engagement (r=-.33; p<.001), and quit intentions (r=.33; p<.001). Findings provide initial validation for a new tool to assess cessation fatigue and contribute needed information on a theory-driven component of cessation-related motivation and relapse risk.
Nicotine Withdrawal Alters Neural Responses to Psychosocial Stress

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Psychosocial stress is considered to be an important mechanism underlying smoking behavior and relapse. Thus, understanding the effects of acute nicotine withdrawal is important to intervene to prevent stress-induced relapse. The current study investigated the neural correlates of psychosocial stress during acute nicotine withdrawal in chronic smokers. Thirty-nine treatment-seeking smokers were randomized to one of two conditions (abstinent 24 hours or smoking as usual) and were then exposed to the Montreal Imaging Stress Task (MIST), a psychosocial stress task consisting of difficult mental arithmetic problems while receiving negative performance feedback. Subjective measures of stress increased following the MIST, compared to baseline. Whole brain group -by-group analysis identified significant activation clusters in four regions: inferior frontal gyrus (IFG), anterior/para cingulate cortex (ACC), precuneus, and supramarginal gyrus (SMG). In all regions, the deprived group showed significantly greater activation compared to the non-deprived group. In increases in subjective stress were negatively related to BOLD signal in the IFG and ACC (p < 0.05). These findings provide new evidence that brain regions previously shown to be predictive of relapse, such as the precuneus and IFG, display heightened neural responses to stress during nicotine deprivation. The current study identified the brain regions that may be associated with stress-potentiated relapse and suggest that increased stress-related activation during nicotine withdrawal may identify those most vulnerable to relapse and represent a target for novel pharmacological intervention.

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Prevalence of Known Risk-Factors for Poor Treatment Outcomes Among Treatment Seeking LGBT Smokers

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BACKGROUND: The LGBTQ community experiences disproportionately high rates of tobacco use and poor treatment outcomes compared to the general population. Confluence of socioeconomic, behavioral, and health care factors are known risk-factors for poor treatment outcomes. Scant research exists on the characteristics of treatment seeking LGBT smokers. The objective of this paper was to report on the prevalence of such risk factors among treatment seeking LGBT-identified smokers. METHODS: Participants were recruited as part of an NIH funded randomized clinical trial of a culturally targeted smoking cessation intervention for LGBT smokers. Eligibility criteria included age 18 years or older, self-identity of LGBT, regular smoking, and interest in quitting. Baseline data were collected using interviewer and self-administered computer questionnaires. RESULTS: N = 444 individuals met criteria for inclusion in the smoking cessation trial (M = 38.7 yrs.). Participants were ethnically diverse (47% non-White), primarily male (71%), identified as gay or lesbian (75.5%), and of lower SES (46% below 20K). A third of the sample reported being HIV+ (33.5%). The majority of smokers were in the contemplation phase (65%), menthol smokers (49%) and moderately to highly nicotine dependent (31%). Substance use was high with 32% frequent/heavy drinkers and 42% reporting other substance use (e.g., cocaine). Psychosocial risk factors included depression (14%) and reports of past 12 month discrimination due to sexual orientation (54%) and gender expression (20%). CONCLUSIONS: Several risk factors for poor treatment outcomes were noted at baseline including low SES, high rates of mental health, other substance use, and perceived discrimination. This clustering of risk factors poses potential risk for poor smoking cessation outcomes and may partially explain observed smoking disparities based on sexual orientation. Ongoing research is examining the benefits of culturally targeted vs. a non-targeted intervention in overcoming risk factors and improving treatment outcomes.

Funding: R01 DA023935-01A2 Matthews (Co-PI) 9/30/10-9/30/15 NIH/NIDA Culturally Targeted and Individually Tailored Smoking Cessation Study: LGBT Smokers. This study will examine smoking cessation outcomes of a culturally targeted vs. non-targeted intervention for LGBT smokers. Further, we aim to identify the psychosocial correlates of treatment outcomes. Role: Co-Principal Investigator (20% FTE)

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Extended Smoking Cessation Treatment Plus Home Visits for Smokers with Schizophrenia

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BACKGROUND: The majority of people with schizophrenia have a lifetime diagnosis of nicotine dependence, primarily from cigarette smoking. A major obstacle to reducing the burden of smoking in people with schizophrenia is that these smokers have much less success at smoking cessation (~1/2) than smokers with no mental...
illness, even though standard treatments are generally more effective than placebo or no treatment in this population. We sought to determine if home visits added to extended combination treatment would lead to improved outcomes in smokers with schizophrenia. METHOD: 34 cigarette smokers with schizophrenia completed either extended treatment plus home visits (EXT + HV; n = 11), EXT without HV (n = 10), or treatment as usual (TAU; n = 13) (random assignment). EXT consisted of 26 weekly treatment visits using the combination of group cognitive-behavioral therapy (CBT), bupropion naltrexone, nicotine patch, and nicotine lozenges. HV consisted of bi-weekly home visits with brief psychotherapy with significant others in the environment and assessment of secondhand smoke exposure. TAU consisted of 12 weeks of group CBT plus serial single or combination medication trials as per standard care. RESULTS: Percentage changes in cigarettes smoked per day were -78, -66, and -57 for EXT + HV, EXT alone, and TAU, respectively, which was significantly greater for both extended treatment groups than TAU (Student t tests; p < 0.05). In addition, percentages of quitters in the three groups were 45, 30, and 15, respectively, which was significantly higher for EXT + HV than TAU (p < 0.05). Participants in the EXT + HV group received 8 (± 5) home visits, and home visits were easily scheduled in the majority of patients assigned to this group. CONCLUSIONS: Home visits improve outcomes in smokers with schizophrenia in the context of extended, comprehensive smoking cessation treatment. Study findings indicate that engagement of significant others in the environment and assessment of environmental triggers at home may enhance smoking cessation outcomes for smokers with severe mental illness.

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POS1-158 PARENTAL RESTRICTION OF MATURE-RATED MEDIA AND ITS ASSOCIATION WITH TOBACCO USE IN ARGENTINA

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OBJECTIVE: To assess the relation between parenting and tobacco use among Latino adolescents. Methods: Cross-sectional school-based youth survey of n=3,172 students (age range from 11 to 17 years; 57.6% boys) in three large Argentinian cities. The anonymous survey queried tobacco use among current smokers. Among 2486 never smokers 26.5% were susceptible to smoking. 71% of respondents reported at least one parental media restriction (internet 52%, videogame 25%, TV 43%, adult movies 34%), 9% reported restriction in all four venues. In multivariate analyses restriction on all four media venues was strongly protective for tobacco use outcomes, after accounting for general parenting. Compared with no restriction, the adjusted odds ratio (AOR) for current smoking for full restrictions was 0.32 (0.18-0.59), and the AOR to be susceptible of smoking during next year was 0.32 (0.24-0.43). The most important single restriction was movies rated for adults, AOR 0.54 (0.36-0.81). Greater maternal mother demandingness was also associated with lower likelihood of tobacco use by adolescents, AOR for current smoking was 0.77 (0.64-0.92) and for being susceptible to smoke was AOR = 0.71 (0.61-0.83). CONCLUSION: This study confirms the association between parental media restriction during early adolescence and lower tobacco consumption. Also this study suggests that maternal demandingness play a crucial role in tobacco uptake in this Latin American population. The preponderance of the evidence supports intervention development.

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POS1-159 THE TEMPORAL WINDOW OF VALUATION SPANNING THE FUTURE AND PAST IS CONSTRICTED AMONG ADOLESCENT SMOKERS

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Previous research on smoking status and delay discounting has found that adult smokers discount delayed monetary rewards more than never smokers across different reinforcing magnitudes and for both future and past monetary gains. Discounting of past rewards has been shown to be consistent with that of future rewards. That is, smokers discount past rewards more than non-smokers and it is represented by a hyperbolic function. Comparisons of future discounting of delayed rewards in adolescent smokers and non-smokers have been equivocal and past discounting of monetary gains has not been reported in this population. In the present study, the discounting of delayed past and future monetary rewards in adolescent smokers and non-smokers were compared. Participants completed future and past delay discounting tasks with both $100 and $1000 delayed constant magnitudes. Those participants who discounted inconsistently were removed from analysis resulting in a sample of 18 non-smokers and 20 smokers. A mixed model analysis of covariance of discount rate with discounting task (past vs. future) and magnitude ($100 vs. $1000) as repeated measures variables, smoking status as a between subjects variable, and age as a covariate revealed a main effect of smoking status, F(1, 35) = 5.412, p < 0.026 and a trend toward a significant main effect for discounting task, F(1, 35) = 3.715, p = 0.062. No interactions were significant. Adolescent smokers discount the future more than non-smokers and both groups discount past rewards more than future rewards. These results suggest that compared to adolescent non-smokers, adolescent smokers have a constricted temporal window. These results also suggest that adolescent smokers are more likely to discount past events and may not adequately anticipate the future. Collectively these behaviors may lead to disadvantageous choices.

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POS1-160 UNDERSTANDING SMOKER RECRUITMENT AND RETENTION IN THE UK NATIONAL HEALTH SERVICE STOP SMOKING PROGRAMME: QUALITATIVE ANALYSIS OF ADVISOR INTERVIEWS

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OBJECTIVES: To understand factors affecting smoker recruitment and retention in the UK National Health Service community pharmacy smoking cessation service from the perspective of cessation advisors and thus investigate how the effectiveness of the service might be improved. Setting: 29 community pharmacies in three east London boroughs: Newham; Tower Hamlets; City and Hackney. PARTICIPANTS: Semi-structured, in-depth interviews were conducted with 25 stop smoking advisors (13 pharmacists, 12 support staff). Transcripts were analysed using a thematic framework derived from the Behaviour Change Wheel (COM-B) and the Theoretical Domains Framework to identify aspects of advisor behaviour that might be modified to improve effectiveness of the service. RESULTS: Advisors perceived that their behaviour in recruiting and retaining smokers was influenced by: (1) early characterisation of smokers into those likely to join or drop out of the service (2) perceptions about smokers’ readiness to quit; (3) perceived structural and/or organisational problems involving programme delivery. Active smoker recruitment was sometimes low priority in part due to perceived insufficient funding for this and anticipated challenging interactions with smokers. Suggestions given to improve smoker recruitment and retention comprised: (1) developing an holistic, supportive approach and belief in the importance of active smoker engagement; (2) increasing remuneration for quitters; (3) providing regular advisor training in communication and motivational skills; (4) training counter assistants in smoker recruitment; (5) making the programme flexible to suit clients’ needs; (6) promoting the
programme outside pharmacies to increase awareness. CONCLUSIONS: Addressing advisors’ beliefs about active engagement and follow-up of clients, together with regular skills training might help to increase smoker recruitment and retention and could potentially improve quit rates. Additional training on recruitment methods for counter assistants would be useful in increasing numbers of service users. Changes to the remuneration structure could also be fruitful.

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POS1-161 INFORMATION EXPOSURE ABOUT E-CIGARETTES PREDICTS REDUCED HARM PERCEPTIONS AND E-CIGARETTE USE AMONG ADULT SMOKERS IN THE U.S.

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BACKGROUND: E-cigarettes have been the featured topic of much product advertising and media coverage. Public awareness about e-cigarettes has increased, and e-cigarette advertising has been associated with interest in trying the product and with eliciting smoking cues among smokers and former smokers. In addition, the perception of reduced harm from e-cigarettes has been associated with e-cigarette use behavior. OBJECTIVES: to assess adult smokers’ exposure to information about e-cigarettes in the public information environment using a comprehensive list of potential media channels/sources of information; to evaluate whether exposure to e-cigarette information independently predicts e-cigarette use behavior and perceptions about addiction and reduced harm in adult smokers; and to test whether the effect of information exposure on e-cigarette use is mediated by reduced harm perceptions. METHODS: Data were collected using a representative online panel of current adult cigarette smokers (N = 2254). Multivariable logistic regression was employed to assess whether information exposure predicted e-cigarette use, addiction beliefs, and perceptions of reduced harm, and a mediation model was employed to test whether harm perceptions mediated the influence of information exposure on e-cigarette use behavior. RESULTS: Forty percent of respondents reported seeing, hearing, or reading about e-cigarettes in the media “a lot of times,” with television and point-of-sale being the most common channels of exposure. Those reporting a lot of exposure were 40% more likely than those reporting low or no exposure to say that using e-cigarettes is “not at all harmful” to a person’s health (OR=1.43, CI=1.006, 2.050) and were 40% more likely to say they use e-cigarettes every day or some days (OR=1.406, CI=1.034, 1.912). Information exposure did not independently predict addiction beliefs (OR=0.802, CI=0.553, 1.164). The indirect effect of harm perceptions on the relationship between information exposure and e-cigarette use was not statistically significant (p=0.10). CONCLUSIONS: Exposure to information about e-cigarettes is associated with reduced harm perceptions and e-cigarette use.

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POS2-1
CONSUMER RESPONSES TO MODIFIED RISK TOBACCO PRODUCT ADVERTISING
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BACKGROUND: The Food and Drug Administration has regulatory authority over modified risk tobacco advertising claims though few studies have examined how consumers respond to modified risk messages. This study evaluates consumers’ cognitive reactions to four advertising claim variants compared with a no claim control. METHOD: Participants (N=3001) were recruited from a web-based panel and randomized to view one of five Camel Snus print advertisements. Four of the ads presented information related to a reduced risk for lung cancer (e.g. “Scientific evidence suggests that snus does not cause lung cancer”) in varying formats: (1) text; (2) bar chart; (3) text/testimonial; (4) bar chart/testimonial. The fifth was a current ad for Camel Snus without the explicit claim made about lung cancer risk. Following ad presentation, participants reported on truthfulness and skepticism of ad content, and perceived health risks associated with product use. RESULTS: The bar chart/testimonial ad was viewed with greater skepticism than all other formats and as less truthful than the bar chart and control formats (F=9.65, p<.001). The text/testimonial ad was viewed as less truthful than the control ad (F=5.41, p<.001). Current daily smokers reported less skepticism (F=60.13, p<.001) and more truthfulness (F=53.12, p<.001) of ad content overall compared with ever/former and non-smokers. The control ad was associated with perceptions of increased health risks compared to the text and bar chart/testimonial ads; the text/testimonial ad was associated with perceptions of lower health risks compared to all other ad formats. Perceptions of health risks associated with snus use did not differ significantly by smoking status. Exposure to a particular ad was not associated with intention to purchase snus within the next month (p=.852). CONCLUSIONS: Consumers responded to modified risk claims and perceived that the product poses lower health risks than other tobacco products. However, consumers perceived the claims as less truthful and were more skeptical of the ad content compared with the control ad. If modified risk claims do not increase use among those who would otherwise abstain, they may be useful in convincing smokers to switch to a lower risk product.

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POS2-2
KNOWING FEMALE SMOKERS’ PROFILE WITH MULTIPLE CHRONIC CONDITIONS IN THE SMOKING CESSATION PROCESS
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INTRODUCTION: The relationship between women and tobacco has genetic, hormonal and behavioral influences in response both to nicotinic stimulation as to their psychological changes during the smoking habit. This process affects the characteristics of smoking itself and the smoking cessation process. OBJECTIVES: describe the profile of women smokers and their associations, and users watched in an outpatient secondary care, assistance to hypertension, diabetes and chronic renal disease, focused on treatment for smoking cessation. METH-ODS: Longitudinal study in Juiz de Fora HIPERDIA Center (Brazil), May/2012 to May/2015, referring to 24 consecutive groups of treatment for tobacco cessation, accompanied by a multidisciplinary team, with awareness sessions, cognitive behav-ior approach (ABA), from 1st to 4th, followed by assessments in 8 weeks. It was defined as high nicotine dependence, the Fagerstrom Test (FT) ≥5 points; Depression, PHQ-2≥3 points; abnormal waist circumference (AWC) values≥88 cm for women and≥102 cm for men, as declared atherosclerotic disease (OAD), the presence of early vascular damage, regardless of the affected territory; cessa-tion index (CI, INCA standard cession), percentage of individuals in treatment and without smoke the 4th ACC session. RESULTS: Sample of 170 users, with female majority (59.6%), aged 55.9±8.9 years, with low education (79.9%) and 58.2% of sedentary. Compared to the men’s sample of this study, women were characterized by a greater tendency to high blood pressure (p=0.085) and a sig-nificant prevalence of peripheral vascular disease (p=0.004), DAD (p=0.013), CAa (p=0.0001) and depression (p=0.001). As Smoking characteristics, we observed a trend to higher nicotine dependence (p=0.092). Ally, women still had lower IQ in the 8 weeks of treatment (p=0.050), despite the greater use of smoking cessation therapy for cessation (p=0.017). CONCLUSION: In the sample of a population with multi-ple chronic conditions, high cardiovascular risk, women with increased abdominal obesity and previous vascular damage were more prevalent. The increased use of combined medications did not guarantee a higher IQ, combined with greater nicotine dependence and depressive symptoms, compared to the men’s sample. A more personalized approach considering this population should be mandatory.

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POS2-3
TOBACCO SALES TO MINORS: STATE DIFFERENCES IN FDA COMPLIANCE CHECK INSPECTIONS, 2014
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INTRODUCTION: The majority of adult smokers try their first cigarette by the age of 18, and reducing youth access to tobacco may reduce youth smoking preva-lence as part of comprehensive programs. As part of compliance and enforcement efforts of the Family Smoking Prevention and Tobacco Control Act of 2009, the Food and Drug Administration (FDA) funds states to conduct underage purchase inspections of tobacco retailers. Given past evidence of differences in state imple-mentation of youth access programs, we examine state variation outcomes and, unlike previous studies, disaggregate youth and adult inspection results for tobac-co retailers. METHODS: We examined publically available inspection outcomes of tobacco retailers across the U.S. from January-December 2014 with minor involvement. As retailers may be inspected more than once, we included only the first report-ed inspection of a retailer. We used ArcGIS mapping software to visually inspect the data, and we compared proportions of warning letters issued for sales to mi nors between states. RESULTS: During 2014, FDA contractors completed 65,139 underage purchase inspections in 48 states and the District of Columbia (DC). FDA issued warning letters for a violation in 12.2% of inspections (n=7,947). The overall number of warning letters issued per state ranged from less than 10 in six states and DC to 848 in Washington (M=162, SD=179). The percentage of total warning letters issued for youth access violations ranged from 0% in Alas-ka to 23% in Michigan (M=10.8, SD=6.1). DISCUSSION: Efforts to disrupt youth access to tobacco products by enforcing compliance with federal minimum age requirements have the potential to reduce the number of minors who use tobacco. Results indicate that FDA sponsored compliance inspections vary widely across the US, suggesting variations in protocols or inconsistent enforcement efforts by states. Additional research should examine inspections protocols and determine if additional standardization might increase retailer compliance. This may increase FDA’s impact on youth access to regulated tobacco products and thus the health impact of the FDA’s work.

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POS2-4
THE EFFECTIVENESS OF NICOTINE-PATCH THERAPY FOR SMOKING CESSATION IN SAUDI SMOKERS IN CENTRAL SAUDI ARABIA
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OBJECTIVES: To evaluate the effectiveness and safety of nicotine- patch thera-py for smoking cessation in Saudismokers. METHODS: A prospective, one group study was carried out at Naqa charity clinic for smoking cessation in Riyadh city, Saudi Arabia. A total of 31 subjects who attended smoking cessation clinic from June, 2014 to August 2014 were studied. The nicotine- patch therapy outcomes were measured at baseline and at 6 weeks after use of nicotine- patch therapy. RESULTS: The analyzed statistic revealed that there were significant decreased in
the number of cigarette per day over 6 weeks (p=0.001), and Co level (p=0.001) over 6 weeks of nicotine- patch therapy. At 6 weeks, abstinence rate was 58% (verified by CO level) and no serious adverse reactions were documented, the most common side effects were nausea, headache and local irritation signs. In addition, our finding revealed that smokers were likely to suffer from withdrawal symptoms following trying to quit. These withdrawal symptoms include sleep disturbance, loss of concentration and weight gain as well as irritability. CONCLUSION: Results of this study showing that nicotine- patch therapy is safety and effectiveness for smoking cessation in Saudi population.

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POS2-5
IMPLEMENTATION AND OUTCOMES OF A NATIONAL POLICY TO REDUCE TOBACCO RETAIL DENSITY IN HUNGARY

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Policies that reduce tobacco retail density are considered critical strategies for the “tobacco endgame.” While density-reduction strategies are being explored in the U.S. at the state and local levels, Hungary has embarked on a federally directed, nationwide effort to regulate the number and distribution of tobacco retailers. The new structure of retail trade of tobacco products in Hungary is regulated by Act CXXXIV of 2012 on Reducing Smoking among Minors and on the Retail of Tobacco Products (Tobacco Act), which was promulgated on 24 September 2012. As part of the Tobacco Act, a new tobacco retail system went into effect on 1 July 2013, giving the State exclusive ownership of the tobacco retailing rights for the assignment of which it issues a public invitation to tender. The Tobacco Act brought about major changes in tobacco retail in Hungary not only by proscribing that only persons meeting the statutory requirements may exercise the concession granted by the state for the retailing of tobacco products, but also by setting a maximum number of concessions that may be allocated to municipalities. The State regulates the sites of the sale of tobacco products by requiring that tobacco products may only be sold in National Tobacco Shops, specifying the products that may be sold in tobacco shops, and banning minors from the premises. Violation of licensing rules can lead to outright rescission of concession rights. Key outcomes of the legislation include: creation of a network of National Tobacco Shops with a standardized image and darkened window to eliminate tobacco product cues that are typically visible from outside of stores; a significant reduction in tobacco retailers from approximately 40,000 unregulated outlets nationwide prior to policy implementation to 6300 licensed National Tobacco Shops; a reduction in illegal sales to minors, from 58% of stores found to be non-compliant in 2012 to 12% in 2013.

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POS2-6
AN EXPERIMENTAL MANIPULATION OF REDUCED NICOTINE CONTENT EXPECTANCIES ALTERS INITIAL SUBJECTIVE AND BEHAVIORAL RESPONSES TO SMOKING: A PILOT STUDY

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Research on consumer response to reduced nicotine cigarettes (RNCs) is needed to inform the implementation of a federal nicotine reduction policy. It is unclear if negative responses to RNCs result directly from deficient nicotine content or from smokers’ (negative) expectancies about using RNCs. This study examined the effects of nicotine content expectancies, manipulated via text description and independent of actual cigarette nicotine content, on subjective and behavioral responses to smoking. Thirty-six 12-hour abstinent daily smokers completed a three-session crossover design study. During each session, participants smoked their preferred brand cigarette – blinded and described as containing “usual,” “low,” and “very low” nicotine content – through a topography device and completed assessments of craving, withdrawal, carbon monoxide (CO), and subjective ratings; description order was random and counterbalanced across participants. Compared to smoking the “usual” nicotine content cigarette, participants experienced less craving reduction after smoking the “low” and “very low” nicotine content cigarettes (p’s = 0.05 and 0.034, respectively). Participants also took shallower puffs of these cigarettes and rated them as being weaker, too mild, and having weaker smoke (p’s = 0.003-0.046). The “very low” and “low” content cigarettes did not differ from one another on any measures (p’s > 0.1). Nicotine content description did not affect withdrawal suppression, CO boost, or other subjective rating and topography measures (p’s > 0.2). Results suggest that negative subjective ratings given to RNCs in extant trials may be due, at least partially, to negative expectations about using a cigarette containing less nicotine. This bias may need to be addressed prior to policy implementation to promote initial positive consumer response to RNCs and enhance the effectiveness of this strategy.

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POS2-8
TOBACCO MARKETING, SMOKING SUSCEPTIBILITY, AND SMOKING BEHAVIOR AMONG EARLY ADOLESCENTS IN MEXICO
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BACKGROUND: Tobacco advertising through traditional channels is banned in Mexico. Nevertheless, marketing at the point of sale (POS) and through the Internet may promote adolescent smoking. METHODS: Data came from a survey of adolescents attending middle schools that were randomly selected from the three largest cities in Mexico (n=8484). Students were classified as: never smokers, who were not susceptible to smoke; never smokers who were susceptible to smoke; and current smokers (smoked in last 30 days). Marketing exposure was assessed by asking frequency of going to stores that sell tobacco (POS), and frequency of noticing tobacco marketing on the Internet. Furthermore, cued recall of three cigarette brands was assessed (no recall; recall 1 brand; recall 2 or 3 brands), as well as positive expectancies from smoking. Mixed logistic regression models were used to assess unadjusted and adjusted odds of being a susceptible nonsmoker (never smokers only) and a current smoker (entire sample). Adjustment variables included socio-demographics, smoking amongst family and friends, parental rules, other substance use and sensation seeking. RESULTS: Of all adolescents, 57% were not susceptible never smokers, 19% were susceptible never smokers, 8% were current smokers, and 16% had tried smoking, but not currently. Frequent POS exposure was associated with greater odds of being susceptible (AOR = 1.49, 95%CI=1.24-1.79), and being a current smoker (AOR = 1.60, 95%CI=1.21-2.11). Internet marketing exposure was associated independently with susceptibility (AOR = 1.34, 95%CI=1.06-1.67; Frequent vs. Never). Brand recall and high positive expectancies were also independently associated with susceptibility (AOR=1.26, 95%CI=1.07-1.47; no recall vs. 1 brand; AOR = 5.34, 95%CI=4.52-6.31, respectively) and current smoking (AOR=1.67, 95%CI=1.42-2.74; no recall vs. 1 brand; AOR = 4.16, 95%CI=3.04-5.68, respectively). CONCLUSION: Marketing through POS and the Internet may be promoting smoking among early adolescents in Mexico. To protect adolescents from tobacco marketing, policy makers should consider comprehensive legislation that bans marketing through POS and the Internet.

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POS2-9
DATA FOR TOBACCO RESEARCH FROM THE NATIONAL ADDICTION & HIV DATA ARCHIVE PROGRAM
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AIM: To highlight several archival datasets available for tobacco research using secondary data analysis. Many of the NIH institutes, including the National Institute on Drug Abuse (NIDA), are putting major emphasis on and resources into promoting data sharing. Original investigators usually collect data from an expansive array of instruments and measures. Many variables collected are under-analyzed by the original research team. Unlimited research questions can be addressed through secondary research from these datasets. The National Addiction and HIV Data Archive Program (NAHDAP) provides access to free, well-documented, policy-relevant datasets for future research on tobacco and smoking, most of which are longitudinal and several nationally representative. Subjects include adolescents, young adults, adults, and older adults; minority populations; general populations; and at-risk populations. Data topics include tobacco, alcohol, and drug use; family relationships; peer relationships; crime and delinquency; other risk factors; prevention and treatment; and social behavior and attitudes. In particular, the poster will highlight the availability of data from the Population Assessment of Tobacco and Health (PATH) Study, an ongoing national longitudinal study of tobacco use and how it affects the health of people in the United States. The study is a collaboration between the National Institutes of Health (NIH) and the Food and Drug Administration (FDA). Both public-use and restricted-use data from the PATH Study will be available from NAHDAP. The poster will also describe NAHDAP’s data resources and services, including tools researchers can use to explore the data online. These studies can be found at through the NAHDAP website (http://www.icpsr.umich.edu/icpsrweb/NAHDAP/).

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POS2-11
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According to the Family Smoking Prevention and Tobacco Control Act, graphic health warnings were scheduled to be on cigarette packs and advertisements in the United States no later than September 2012; however, implementation has been delayed. This study aimed to establish baseline knowledge of current text-only labels among U.S. adult smokers. Telephone and web-based surveys of current cigarette smokers (n=1995) and former smokers who quit within the year prior to being surveyed (n=316) were completed between May 2014 and April 2015. Descriptive statistics and chi-square tests were used to compare differences in knowledge between groups. Overall, 12% of respondents reported noticing warning labels ‘often’/‘very often’ in the last month. Current smokers were more likely (13%) than recent quitters (7%) to report noticing warning labels ‘often’/‘very often’ in the past month (p=0.002). Fewer respondents (9%) reported reading the labels ‘closely’/‘often’/‘very often’ in the last month. Ninety percent reported that the labels ‘never’ stopped them from smoking in the last month. Only 7% of current smokers report that they actively avoided looking at the labels. Overall, 40% of respondents reported that the labels did not make them think about the risks associated with smoking cigarettes (41% current smokers, 35% recent quitters; p=0.001). The majority of respondents (76%) reported that they noticed other aspects of the pack such as branding first. Less than half (41%) of current smokers and 49% of recent quitters (p=0.009) indicated that current warning labels caused concern. There was some support for increasing the amount of health information on cigarette packs among current smokers (36%) and recent quitters (47%). This difference was statistically significant (p=0.001). These results suggest that many cigarette smokers neither notice nor read closely the text-only warning labels that are currently printed on cigarette packs in the U.S. Further, few reported that the labels have any effect on their smoking behavior.

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POS2-12
NEW ZEALAND (NZ) SMOKERS’ PERCEPTIONS OF THE EFFECTS OF FIVE THEORETICAL TOBACCO RETAIL REDUCTION POLICIES
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BACKGROUND: The widespread tobacco availability in NZ is inconsistent with the government’s goal of becoming smokefree by 2025. We assessed the perceived impact of five hypothetical policies that would reduce the retail supply of tobacco,
POS2-13
EXAMINING POLICY SUCCESSES IN REDUCING ADULT SMOKING RATES IN LOW-SOCIOECONOMIC POPULATIONS
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Adults of lower socioeconomic status (SES) smoke at nearly twice the rate of those not living in poverty; low-SES populations have a higher rate of smoking uptake, lower rate of cessation and suffer from higher rates of preventable, smoking-related chronic disease and death. Smoking rates among New York low-SES African-American and White adults remain significantly higher than their higher-earning counterparts. Comprehensive tobacco control focuses on policy and health systems change supported by health communications. Key objectives are implementing policies that alter the environment in which tobacco is marketed and obtained, tobacco use initiated, maintained, and given up. Proven policies in New York include maintaining the high cost of tobacco and comprehensive clean indoor air. New York now supports promising initiatives aimed at retail that reduce the impact of marketing on youth uptake. This epidemiologic study examined the association of comprehensive tobacco control policy initiatives on key tobacco use indicators in the most vulnerable populations. In 2011 the smoking rate among New York Blacks, Whites, and Latinos earning over $25K was 13.4%, 14.0% and 15.3%, respectively. These figures did not significantly change by 2014. For those earning under $25K per year, the smoking rate for Blacks declined to 22.1% in 2014 from 30.4% in 2011; for Whites it declined to 26.4% in 2014 from 31.5% in 2011; and for Latinos it declined from 21.1% to 13.6%. These results suggest that disparities in benefits from tobacco control policy initiatives. To determine how policy may influence behavior in target populations and which tobacco use behaviors are changing over time we examined indicators, including rates of low/untaxed cigarette purchases, anti-tobacco media awareness, in-home smoke free policies, quitline or quitline access, as well as quit attempts, provider assistance, and reasons given by smokers for making quit attempts. Comprehensive tobacco control appears to be working for those disproportionately affected by tobacco use, but a better understanding is needed of how and which policies reduce the negative impact of tobacco on disparate populations.

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POS2-14
IMPACT OF A COMPREHENSIVE SMOKE-FREE LAW ON INDOOR AIR QUALITY AT HOSPITALITY VENUES IN SOUTH KOREA
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BACKGROUND: In South Korea, tobacco-free policies were implemented on January 2014. However, impact of the smoking ban legislation at hospitality venues is still limited. This study, aimed to assess the degree of change of indoor secondhand exposure level after the enactment of the smoking ban legislation to evaluate the impact. METHODS: In this cross-sectional study, we examined PM2.5 measurements of pre- and post-ban period (in pubs, and PC rooms (n=240, 120 per each venue) that were randomly selected in 6 metropolitan cities of South Korea. We conducted a survey on the observation of existing smoking control policies, such as the enforcement of smoking ban, and the number of ventilators. RESULTS: The median interquartile range, IQR of the PM2.5 concentration for all venues was 20 μg/m³ (0-40μg/m³). However, we could detect high levels (>50 μg/m³) of PM2.5 in many venues. CONCLUSIONS: The results support the introduction of more rigorous monitoring of SHS exposure levels toward the ultimate goal of encouraging a complete smoking ban in hospitality venues, including pubs, and PC rooms in metropolitan cities of South Korea.

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POS2-15
MULTIDISCIPLINARY CARE UNIT FOR SMOKING USERS WITH MULTIPLE CHRONIC CONDITIONS: TOBACCO STATUS IN A FOLLOW-UP OF 12 MONTHS
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The smoking cessation is widely reported, but achieving and maintaining abstinence is a difficult process. The work of a multidisciplinary team in handling the process is of prime importance. Objectives: To assess the cessation rate for smokers with multiple chronic conditions (MCC) participants in an intervention group and the features associated with it. Methods: Longitudinal study of users with MCC and high cardiovascular risk who participated of a treatment group for smoking cessation in a public secondary care service in Juiz de Fora/Minas Gerais/Brazil, referring to the first 12 consecutive intervention groups with a multidisciplinary team, from 05/2012 to 12/2013. Data were obtained through telephone survey for tracking users after the end of their participation in treatment sessions. Those who agreed to participate were asked about their smoking status and, accordingly to their answers, about abstinence or their current smoking habits. We considered abstinents those who remained abstinent for at least 12 months. Results: Of the 94 participants, aged 54.9±6.4 years, 59.6% were female, and 79.8% had high nicotine dependence; 63% of the sample answered the phone. Of the 58 respondents, 25.9% reported being abstinent for 25.2±8.5 months and, of those, only 2 had lapses among those who quit. 73.3% had used medication during the process. Nicotine replacement therapy was used by 36.4%, bupropion by 27.3% and cotinine therapy by 36.4% of the users. Of those who currently smoke (74.1%), 66.7% remained 6.5±2.2 months without smoking, and 92.9% claimed they wanted to stop smoking. Despite the maintenance of addiction, these current smokers consume 14.7±6.8 cig/day versus 22.0±9.4 cig/day at baseline. Conclusion: Comparing the cessation rates for a period equal to or greater than six months, we observed a high rate of smoking cessation in our study coinciding with the period of greatest commitment of the multidisciplinary team. Such prevalence of abstinence progressively decreased during follow-up of 12 months, and coincided with national prevalence for the same period. We observed that in this population, the biggest barrier was the maintenance of abstinence.

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POS2-16
TOBACCO IMAGERY ON NEW ZEALAND TELEVISION: TEN YEARS ON
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BACKGROUND: Television (TV) viewing among young people has been shown to be associated with smoking initiation, volume, and persistence in young adulthood. The extent to which the fact that New Zealand (NZ) has had a ban on tobacco marketing and sponsorship on television for many years, smoking is shown on prime time TV, children’s TV and in popular films. Evidence from a decade ago shows that one in four television programmes contained tobacco imagery, while only 15% of these scenes portrayed anti-tobacco messages. METHOD: This research used a content analysis of 73 hours of prime time evening television to examine changes in the frequency and contexts of tobacco imagery on NZ TV from 2004 to 2014, including programmes, advertisements and trailers. The imagery was coded for tobacco imagery, which was defined as being neutral or pro-tobacco, or anti-tobacco.

RESULTS: Of the 93 programmes coded over the week’s viewing, 29% had at least one scene with tobacco imagery. Of the 71 scenes with tobacco imagery, 59 were judged as showing neutral or pro-tobacco imagery or conversation, while 12 scenes showed anti-tobacco imagery. There were fewer scenes with anti-tobacco imagery. There was also no significant difference in the amount of neutral-pro tobacco imagery and anti-tobacco imagery between the two time points. CONCLUSION: There has been very little change in the amount of tobacco imagery on NZ TV over the past decade. Given the potential for tobacco imagery to promote smoking among young people while reinforcing the habit among those who are trying to quit, action needs to be taken if we are going to reach our national goal of a Smokefree country by 2025. More could be done to counterbalance this imagery by promoting the Quitting and other forms of anti-tobacco media campaigns. While tobacco imagery cannot be banned in any meaningful way, producers of local TV programmes could be encouraged to consider the depiction of tobacco imagery in a way that clearly reflects the declining use of tobacco, the desire of most smokers to quit and the profound health effects of smoking.

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POS2-17
EVALUATION OF RATIONALES FOR AND AGAINST REGULATING E-CIGARETTES
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INTRODUCTION: Various US jurisdictions are considering regulating e-cigarette sale, marketing, distribution, and use in public places. We piloted a survey among Amazon Mechanical Turk (MTurk) users to assess attitudes toward reasons for regulating or not regulating e-cigarettes. Findings will help to generate effective message strategies to increase public support for these policies. METHODS: A demographically diverse sample of 581 adults (ages 18-79; 47% non-smokers, 22% former smokers, 31% current smokers) completed the study on MTurk. Respondents rated agreement/disagreement with 8 reasons for regulating (e.g., put small independent e-cigarette companies out of business). They also provided additional reasons not mentioned in the survey. RESULTS: Most respondents agreed that regulations would ‘help prevent e-cigarettes with unsafe levels of nicotine from being sold to consumers’ (84%), ‘make sure that these products are safe for consumers’ (81%), ‘help prevent young people from getting addicted to nicotine’ (73%). Fewer respondents agreed with the top reasons not to regulate e-cigarettes: About half agreed that regulation would ‘create barriers to new companies entering the market due to application costs and user fees’ (50%), ‘take away people’s freedom to choose whether or not to use these products’ (49%), and ‘make it harder for smokers to use a less harmful alternative to smoking cigarettes’ (48%). Other reasons respondents said they had heard related to regulating e-cigarettes included limited safety data for e-cigarettes, concerns about nicotine’s addictiveness, need for tax revenue, and potential harms. CONCLUSION: Messages emphasizing protection of consumer safety may be more persuasive to increase public support for regulating e-cigarettes. Further research to test the effectiveness of this message theme is needed among representative samples.

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POS2-18
PERCEPTIONS OF “NATURAL” AND “ADDITIVE-FREE” CIGARETTES AND INTENTIONS TO PURCHASE
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INTRODUCTION: Many smokers perceive cigarettes labeled ‘natural’ or ‘additive-free’ as less harmful than other cigarettes. In August 2015, the Food and Drug Administration (FDA) issued warning letters to manufacturers stating that promoting brands as ‘natural’ or ‘additive-free’ gives the appearance of a modified risk claim. American Spirit (AS), promoted as ‘natural’ and ‘additive-free’ in extensive national advertising, is one of Reynolds-American’s focus brands and has gained market share at a considerable rate over the last decade, now approaching 3% of total sales. The current study examined beliefs about the relative harms of ‘natural’ cigarettes, and whether these beliefs influenced perceptions of AS advertising and intention to purchase AS. METHODS: Web-based survey conducted in 2013 among 3006 US-based web panel members. Sample included adolescents aged 15-17 recruited via parent panel members, and adults aged 16-65. Participants completed scales of perceived risks of smoking-related diseases, assessments of believability and affective response to an AS advertisement, and purchase intention. RESULTS: Ratings of health risks differed by sex, race, education, smoking status, and age. Regression analysis showed that, controlling for perceived risks of other cigarettes, never smokers had significantly fewer misperceptions of ‘natural’ cigarettes than current smokers (B=0.108, p<0.001). Eleven percent reported at least some intention to purchase AS. Current smokers were substantially more likely to intend to purchase AS than never smokers (OR=14.61). In multivariate models, believing the AS ad was truthful (OR=1.36) and having more misperceptions about ‘natural’ cigarette health risks (OR=1.13) were associated with greater AS purchase intention. CONCLUSIONS: Current smokers perceive cigarettes labeled as ‘natural’ or ‘additive-free’ as less harmful, and this influences their perceptions of AS advertising claims and intention to purchase AS, even controlling for other factors. These findings underscore FDA’s recent warning letters.

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POS2-19
A LONGITUDINAL STUDY OF THE EFFECT OF E-CIGARETTE ADVERTISEMENTS ON E-CIGARETTE USE AMONG U.S. ADULT SMOKERS AND NONSMOKERS
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BACKGROUND: During 2011-2013, e-cigarette advertising expenditures tripled from $6.4 to $18.3 million. Some e-cigarette advertisements have used themes that may appeal to smokers and nonsmokers (e.g., e-cigarettes are healthier or more socially acceptable than cigarettes). This longitudinal study measured the relationship between receptivity to e-cigarette advertisements at baseline and current e-cigarette use at follow-up among US adult cigarette smokers and nonsmokers. METHODS: Nationally representative online panels administered by GfK Custom Research were used to collect repeated measures among current cigarette smokers (n=10,181) and nonsmokers (n=3,123) at baseline (Apr 6-Jul 6, 2014) and 5 months later (Sep 8-Nov 17, 2014). At baseline, respondents were shown an e-cigarette advertisement selected randomly from 5 existing TV and online ad-
ticipants and asked if they were aware of it (exposure). Among those exposed, receptivity to e-cigarette advertisement was defined as perceived effectiveness of the advertisement (it was “worth remembering”; “grabbed my attention”; “powerful”; “informative”; “meaningful” or “convincing”). Multivariable logistic regression was used to model the association between e-cigarette advertisement at baseline and (current or former) e-cigarette use at follow-up. RESULTS: Overall, 27% of current cigarette smokers and 17% of nonsmokers were aware of an e-cigarette advertisement at baseline. Among current cigarette smokers who did not use e-cigarettes at baseline, receptivity to e-cigarette advertisements at baseline was associated with current e-cigarette use at follow-up (aOR=1.26; p<0.05). Among non-cigarette smokers who did not use e-cigarettes at baseline, receptivity to e-cigarette advertisements at baseline was associated with current e-cigarette use at follow-up (aOR=3.42; p<0.05). CONCLUSION: Receptivity to e-cigarette advertisements among non-users of e-cigarettes at baseline was associated with higher odds of e-cigarette use at follow-up among both cigarette smokers and nonsmokers. Understanding the role of advertising on e-cigarette initiation is important to inform public health program and policy.

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**POS2-20**

### NATIONAL AND STATE-SPECIFIC PREVALENCE OF ATTITUDES TOWARD SMOKE-FREE PARKS AMONG U.S. ADULTS

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**BACKGROUND:** Smoke-free parks have the potential to decrease secondhand smoke exposure among adults and youth, as smoke-free environments are more likely to be associated with adoption and enforcement of smoke-free policies. We assessed national and state-specific prevalence of favorable attitudes towards 100% smoke-free parks among U.S. adults and national sociodemographic correlates of attitudes towards smoke-free parks, overall and by tobacco use. **METHODS:** Data came from the 2009-2010 National Adult Tobacco Survey, a national landline and cellular telephone survey of non-institutionalized civilian adults aged â‰¥18 years in the 50 U.S. states and D.C. Descriptive statistics and logistic regression were used to assess the prevalence and correlates of attitudes towards smoke-free parks, overall and by current tobacco use status. **RESULTS:** Overall, 38.5% of U.S. adults believed smoking should never be allowed in parks, 42.6% believed smoking should be allowed only at some times or in some places in parks, and 18.9% believed smoking should always be allowed in parks. By state, the prevalence of adults who believed smoking should never be allowed ranged from 29.2% in Kentucky to 48.2% in Maine. By tobacco use, the belief that smoking should never be allowed was highest among nonusers of tobacco (44.6%) and lowest among any combustible tobacco product users (21.6%). Adjusted odds of believing smoking should never be allowed in parks was higher among females, non-Hispanic blacks, non-Hispanic American Indian and Alaska Natives, non-Hispanic ‘Other’ races, Hispanics, those with an unspecified sexual orientation, and those with children <17 years old living in the household; odds were lower among current tobacco users, adults 45-64 years old, and those with some college or an undergraduate degree. **CONCLUSIONS:** Nearly two-fifths of U.S. adults believe smoking should never be allowed in parks, but variations in this belief exist by state, population subgroup, and tobacco use status. Efforts are warranted to educate the public about the health and other benefits of smoke-free parks, particularly among tobacco users.

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**POS2-21**

### TOBACCO USE PERSPECTIVES FROM ABOGINAL PEOPLE WHO IDENTIFY AS TWO-SPIRIT, LESBIAN, GAY, TRANS, AND/OR QUEER – POLICY AND PRACTICE INSIGHTS FROM ONTARIO YOUTH AND YOUNG ADULTS

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**BACKGROUND:** In Canada, tobacco use is high among some sub-populations including youth and young adults, marginalized communities, and among people who identify as lesbian, gay, bisexual, trans and/or queer (LGBTQ). This qualitative study sought to understand tobacco use perspectives of Aboriginal youth and young adults who identify as Two-Spirit, and/or LGBTQ. Some Aboriginal people use the term Two-Spirit (TS) to refer to all sexual or gender variance among people of Indigenous North American ancestry. **METHODS:** This study conducted 24 focus groups with 204 participants between March and May 2015 with youth (aged 16 and 17) and young adults (aged 18-29). Participants were current cigarette smokers or recent quitters (within the last 6 months), and identified as LGBTQ. Focus group discussions were transcribed word-for-word and content was coded based on a priori categories. This study reviews findings related to tobacco use and tobacco control strategies from the perspective of focus group participants who identified as TS and/or Aboriginal (n=29), and compares/contrasts respondent perspectives with other FG participants. **RESULTS:** Some TS/Aboriginal participants described their personal conflict with smoking in relation to their heritage – explaining that in First Nation culture smoking commercial cigarettes is disrespectful because tobacco was meant as a medicine and is used in prayer. A participant explained that misusing tobacco goes against all teachings and is disrespectful to community elders. Strategies to support youth and young adult prevention and cessation use messaging that de-normalizes the tobacco industry. This approach resonated with non-TS/Aboriginal participants, but as one TS participant noted, cigarette manufacturing takes place on some First Nation reserves. **DISCUSSION:** There have been calls for culturally appropriate prevention and cessation policies to support Aboriginal youth/young adults and those from TS LGBTQ communities. Traditional strategies of de-normalizing tobacco and the tobacco industry may not resonate deeply with TS/Aboriginal Canadians.

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**POS2-22**

### NICOTINE CONTENT AND CHILD-RESISTANT PACKAGING OF ELECTRONIC CIGARETTE REFILL LIQUIDS AND VAPE STORE COMPLIANCE WITH STATE SMOKE-FREE LAWS

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**BACKGROUND:** Electronic cigarettes (e-cigarettes) and the liquids used to refill their cartridges (e-juice) are largely unregulated at the federal level; however, some laws have been recently passed by the North Dakota (ND) legislature. **OBJECTIVE:** The purpose of this study was to compare the labeled quantity of the nicotine content of the e-juice sold in vape stores with the actual quantity, determine whether the packaging of e-juices sold within vape stores was child-resistant, and determine compliance by the vape stores with ND state smoke-free laws. This study was conducted prior to implementation of the new laws. **METHODS:** Samples of e-juice and compliance with the ND law were assessed for the 16 eligible venues that were selling e-juices but not required to be licensed to sell tobacco retail products by state law. **FINDINGS:** Of the 70 collected e-juice samples that claimed to contain nicotine, 17% contained more than the labeled quantity and 36% contained less than the labeled quantity by 10% or greater, with 1 sample containing 171% more than the labeled quantity. Of the 94 e-juice containers sampled, only 35% were determined to be fully child-resistant. No store was fully compliant with state smoke-free laws. **CONCLUSIONS:** There appears to be considerable variability in selling practices for e-juice products in ND. Misla-
belping of nicotine in e-juice is common and expose the user to nicotine addiction and the harmful effects of nicotine. The overwhelming lack of child-resistant packaging for this potentially toxic substance is a serious problem. Vapor stores should be licensed, as are other tobacco retailers.

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POS2-23
TAKE IT OUTSIDE! THE EFFECTS OF SMOKE-FREE HOUSING POLICIES ON TOBACCO USE AND SECONDHAND SMOKE EXPOSURE AMONG AFFORDABLE HOUSING RESIDENTS

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INTRODUCTION: Cigarette smoking and secondhand smoke (SHS) exposure contribute to over 530,000 deaths each year in the U.S. Local and state tobacco control laws have helped reduce smoking prevalence and nonsmokers’ SHS exposure over the past 30 years, but progress has been slower for lower SES individuals. Population-level interventions that target tobacco use and exposure in the home environment, where people spend 69% of their time, may be a promising approach to address this issue. The current study examined the effects of smoke-free housing policies on tobacco use and exposure among affordable housing residents. METHOD: Participants in this longitudinal study were 167 residents from 8 affordable housing properties in Minnesota. Participating properties had agreed to adopt a smoke-free housing policy covering indoor grounds, and three of these properties prohibited smoking on all outdoor grounds, too. Participants completed T1 surveys one month prior to policy implementation and T2 surveys six months post-implementation. Surveys assessed tobacco use, quit attempts, and indoor and outdoor SHS exposure. Two compensation options were provided: five sites chose to have participants receive a $15 gift card for completing the T1 survey, and a $20 gift card for T2; the other three sites chose to do random drawings for several $50 gift cards at both T1 and T2. RESULTS: Results indicated a significant reduction in indoor SHS exposure and no change in outdoor SHS exposure from T1 to T2. However, when analyses were limited to only those sites that prohibited smoking indoors, a marginally significant increase in outdoor SHS exposure was observed. Results showed no change in quit attempts from T1 to T2, but smokers were more likely to report either quitting or reducing the amount that they had smoked since T1 than would have been expected in the absence of a smoke-free policy. DISCUSSION: Smoke-free housing policies may be an effective strategy to reduce indoor SHS exposure and promote decreased cigarette use among affordable housing residents. Comprehensive smoke-free policies that cover all indoor and outdoor property grounds are encouraged.

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POS2-24
IMPACT ASSESSMENT OF HUMAN RIGHTS BASED APPROACH TO TOBACCO CONTROL

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BACKGROUND: The effects of tobacco remain a major global public health concern and human rights issue. The WHO Framework Convention on Tobacco Control (FCTC), adopted in 2003 by the World Health Assembly, has 180 parties and has been an important mechanism for expansion of tobacco control policies. The Human Rights and Tobacco Control Network (HRTCN) was established to increase the visibility of tobacco as a human rights issue. HRTCN submitted short reports to the UN Committee on Economic Social and Cultural Rights (CESCR) evaluating party nations’ tobacco control policies and offering recommendations. METHOD: We reviewed “Concluding Observations” documents for nations from which the HRTCN submitted reports. If tobacco was mentioned in the concluding report through acknowledging FCTC ratification, policy changes, or discussing tobacco in the recommendations this was scored as positive result. We then reviewed Concluding Observations for nations for which HRTCN did not submit reports in the same time frame as a comparison RESULTS: 28 HRTCN reports were submitted, and tobacco was mentioned in the Concluding Observations for 8 nations for a success rate of 28.6%. 4 mentioned legislative changes, and 4 included additional recommendations for policy change. Observations mentioning tobacco were: Argentina, Cameroon, Uzbekistan, Indonesia, Armenia, Lithuania, Bulgaria, and Turkmenistan. Two of the countries for which recommendations were included had not ratified the FCTC at the time of review (Argentina, Indonesia). Cameroon had ratified, but had little tobacco control legislation. In the 28 nations for which HRTCN did not submit reports, tobacco was mentioned in the Concluding Observations for 3 nations at a rate of 10.7%. CONCLUSIONS: This was not a controlled study and the 28.6% success rate for cases is less than optimal. However, the findings are suggestive. The higher rate of tobacco mentions for cases where HRTCN short reports were submitted provides preliminary indications that brief short reports can be effective and have potential to increase the focus on tobacco control. In the absence of advocacy for tobacco control, other human rights and social development issues tend to be prioritized. Future work will seek to improve the design and scope of the reports, and the specificity of the background information and recommendations offered.

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POS2-25
ADDRESSING TOBACCO PRODUCT REGULATION IN ETHNICALLY DIVERSE COMMUNITIES BY PARTNERING WITH COMMUNITY HEALTH WORKERS AND KEY OPINION LEADERS

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Tobacco control actions and regulatory messages are not always conveyed in culturally-specific ways or in the most linguistically appropriate manner, particularly for ethnically diverse communities such as African-Americans, American Indians, Koreans, and Latinos. To obtain relevant information to support appropriate approaches, Community Health Workers (CHWs) or Key Opinion Leaders (KOLs) may be helpful as sources, but the information available from these two groups has not been compared. CHWs and KOLs are potentially central in addressing the effects of the tobacco retail environment as they are aware of their strengths, needs, and vulnerabilities. This presentation discusses two studies within a project conducted in Los Angeles that use both CHWs and KOLs to inform regulatory practices. We present data from 8 focus groups conducted with KOLs (N=70) to explore the role that KOLs could play as potential channels for the FDA in delivering tobacco regulatory messages to retailers. In order to gain a broad understanding of the tobacco retail environment in the different communities we recruited KOLs who represented health, media, business, government, education and religious organizations. Most of the KOLs felt that retailers were moderately well-informed of tobacco laws. Less than half of the KOLs, however, believed that retailers were aware of FDA authority over tobacco products. When shown materials for a regulatory message, most of the KOLs expressed concern that the materials may not be effective given the language, colors, and content used. We also present data and lessons learned from working with CHWs in a pilot study conducted in tobacco retail outlets (N=38). The data collection methods include store employee interviews and observations. While most retailers, 70.8%, reported that they had no barriers to compliance, less than half, 43.5%, believed that the FDA had regulatory authority over tobacco products. The findings from this project highlight how KOLs and CHWs each provide an independent window into their communities. The information gained from these different channels in turn creates a stronger foundation for future tobacco control messages and educational campaigns that are likely to be received well in ethnically diverse populations.

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POS2-26
CHARACTERIZATION OF THE BACTERIAL MICROBIOTA ASSOCIATED WITH LITTLE CIGARS

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Despite their critical importance in infectious and chronic diseases, as well as their active role in the production of tobacco-specific N-nitrosoamines (TSNAs), microbial constituents of tobacco products lack characterization. Specifically, there has been no comprehensive characterization performed to date on the bacterial species associated with little cigars, and how these bacterial communities might impact the health of little cigar users. Bacterial communities were characterized in time series experiments in four products: Swisher Sweets Cigaretillos, Swissher Sweets Little Cigars - Sweet Cherry, Cheyenne Cigars Full Flavor 100’s, and Cheyenne Menthol Box. Each product was stored under three different conditions of temperature and relative humidity: room (20°C 50% RH), fridge (5°C 18% RH) and pocket (25°C 30% RH). On days 0, 5, 9 and 14, subsamples were DNA extracted. The DNA was then used to PCR-amplify the V3V4 regions of the bacterial 16S rRNA gene, followed by sequencing on Illumina MiSeq and analysis using the QIIME and Phyloseq software packages. Overall, the little cigar microbiota is diverse: ~2,400 species-level operational taxonomic units (OTUs) were identified, a level similar to that of cigarette products. However, bacterial composition of little cigars is very different from that of cigarettes. Independently of temperature and RH storage conditions, a single bacterial phylum, Firmicutes, dominates in the wrapper whereas the tobacco filling is dominated by Proteobacteria. In addition, significant differences in community composition of the wrapper were observed between different lots. At the genus level, Bacillus and Lactobacillus are the two dominant bacterial groups in the wrapper whereas the Staphylococcus and Pseudomonas genera dominate in the tobacco. These two groups of bacteria comprise well-known opportunistic human pathogens, and are usually very low abundant or absent in the microbiome associated with cigarettes. Additional analyses are currently ongoing to characterize these differences in greater detail. This study is the first to characterize a key component of harmful and potentially harmful constituents in little cigars.

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POS2-27
IS “ORGANIC” THE NEW “LIGHT”? PUBLIC BELIEFS AND EXPERIENCES WITH “ORGANIC,” “ADDITIVE-FREE,” AND “NATURAL” CIGARETTES

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INTRODUCTION: The Family Smoking Prevention and Tobacco Control Act requires FDA pre-approval for any tobacco advertising that implicitly or explicitly suggests reduced risk of harm. We investigated adolescents’ and adults’ perceptions about a recent American Spirit advertisement with “natural,” “organic,” and “additive-free” claims and solicited smokers’ experiences with these cigarettes. METHODS: We conducted 9 focus groups with 59 participants ages 13 to 64 (30 male, 29 female), stratified by age, smoking status, and susceptibility to smoking. We asked participants’ perspectives about an example American Spirit advertisement. Using two coders, we then reviewed the transcripts with ATLAS.ti qualitative analysis software and conducted a thematic content analysis. RESULTS: Many participants were confused about the “natural,” “organic,” and “additive-free” descriptors. Some participants viewed American Spirit cigarettes as being less harmful or possibly less harmful than other cigarettes, even though the ad contained disclaimers explicitly stating that these cigarettes are not safer. Some participants expressed doubt that the disclaimers were fully true, some did not initially notice the disclaimers, and others said that disclaimers tend to be ignored. Smokers had various opinions on the taste of American Spirit cigarettes and their high cost. A few smokers said they smoke them because they think they are not as bad for them as other cigarettes. CONCLUSIONS: Despite the presence of disclaimers in advertising for “natural,” “additive-free,” or “organic” cigarettes, some members of the public still perceive these products as being less harmful than other cigarettes. It may be appropriate for the FDA to restrict these words for the same reason “low,” “light,” and “mild” were restricted—because they imply a safer product.

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POS2-28
CONTENT ANALYSIS OF UNIQUE SELLING PROPOSITIONS IN TOBACCO ADS: CIGARETTES VS. NON-CIGARETTE TOBACCO PRODUCTS

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With the passing of the Family Smoking Prevention and Tobacco Control Act in June, 2009, regulatory approaches related to advertising, marketing, and promotion of tobacco products were conferred to the FDA, with a particular emphasis on restrictions to decrease the marketing and appeal of tobacco products to children and adolescents. In order to inform regulatory decisions around marketing of tobacco products, a descriptive surveillance of tobacco product advertising is important. Recent studies have shown the preponderance of comparative themes in NCTP ads, but no research has systematically analyzed the use of unique selling propositions (USPs) defined as direct and implied unique propositions to the customer that convince them to try/use the product, or switch brands) in marketing these products as well as cigarettes. We conducted a content analysis of cigarette and NCTP print advertisements in consumer magazines for USPs and supporting evidence for the USPs. The sample consisted of distinct cigarette and NCTP ads (for cigars, moist snuff, snus, e-cigarettes) that appeared in consumer magazines from August 2012-August 2013, obtained from Kantar Media (i.e., 70 cigarette, 44 snuff, 27 e-cigarette, 22 cigar, and 8 snus ads). The results demonstrated that the USPs for cigarette advertising included themes such as positive experience of smoking, attractive features, and natural (implying healthy) cigarettes. USPs for e-cigarettes emphasized themes such as superior to traditional cigarettes, attractive features, comparison of advertised e-cigarette brand with other brands, and celebrity endorsements. Similarly, USPs for snus themes underscored themes such as superior to traditional cigarettes, celebrity endorsements, and attractive features. These findings not only contribute to the body of literature showing the growth in the advertising and promotion of poly-tobacco products, but also provide practical implications for the development of counter-advertising interventions that aim at helping youth/young adults (a) become more adept at identifying marketing strategies for tobacco products, and (b) make more critical decisions about tobacco product use.

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POS2-29
POINT-OF-SALE TOBACCO PROMOTION AND YOUTH SMOKING: A META-ANALYSIS
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INTRODUCTION: Previous systematic reviews have found strong evidence of a positive association between exposure to point-of-sale (POS) tobacco promotion and increased smoking and smoking susceptibility among children and adolescents. No meta-analyses of these studies have yet been undertaken. METHODS: Systematic literature searches were carried out to identify all quantitative studies that examined the relationship between POS tobacco promotion and individual-level smoking and smoking-related cognitions among children and adolescents, published between January 1990 and June 2014. Random effects meta-analyses were used. Subgroup analysis was conducted according to extent of the tobacco POS advertising environment. Sensitivity analyses were performed according to study size and quality. RESULTS: Thirteen studies met the inclusion criteria; eleven reported data for behavioural outcomes (e.g. ever-smoking, being a current smoker), six for smoking susceptibility. For the behavioural outcomes, the pooled odds ratio (OR) was 1.61 (95% confidence interval (CI): 1.33–1.96) and for cognitive outcomes the pooled OR was 1.32 (95% CI: 1.09 – 1.61). CONCLUSIONS: Children and adolescents more frequently exposed to POS tobacco promotion have around 1.6 times higher odds of having tried smoking, and around 1.3 times higher odds of being susceptible to future smoking, compared to those less frequently exposed. Together with evaluations of newly implemented POS display bans which suggest this policy reduces youth smoking susceptibility and denormalises smoking, the results strongly indicate that legislation banning tobacco POS promotion will reduce smoking among young people.

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POS2-30
HOW HEALTH RISKS ARE PINPOINTED (OR NOT) ON SOCIAL MEDIA: THE PORTRAYAL OF WATERPIPE SMOKING ON INSTAGRAM
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BACKGROUND: In the last 25 years, rates of waterpipe tobacco smoking have sharply increased in the United States and other Western countries. At the same time, social media platforms such as Instagram have become a popular way to portray various products related to waterpipe smoking. This study aims to examine the portrayal of waterpipe smoking on Instagram, a popular social media platform for adults in the U.S. METHODS: A total of 1,000 Instagram posts were analyzed in a quantitative content analysis focusing on descriptive engagement frequencies as well as on key variables of the framework of the Theory of Reasoned Action (TRA). RESULTS: Waterpipe smoking was portrayed in a consistently positive manner and health risks were rarely mentioned. Of the 1,000 posts, the post containing the most engagement was an ad for the Black & Mild (8.2%), Camel (5.3%), and Skoal (3.4%). CONCLUSION: Instagram represents a prime vehicle for the tobacco industry to market waterpipe smoking, and health risks are rarely portrayed.

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POS2-31
REACHING CONSUMERS: HOW THE TOBACCO INDUSTRY USES EMAIL MARKETING
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BACKGROUND: Restrictions, starting in the 1970s, have limited the tobacco industry from engaging in many traditional forms of marketing. As a result, the industry has shifted significant resources to direct marketing, reaching out to consumers directly through mail, web, email, and mobile marketing platforms. These types of marketing vehicles are opt-in, with consumers electing to participate and receive marketing materials directly from tobacco companies. METHODS: The current study collected and analyzed all tobacco company-generated emails received between March 2010-May 2015 (N=6,990), resulting from 85 registrations on 16 different tobacco and e-cigarette product web sites. A smaller subset of emails (n=1,646) generated from October 2014-May 2015, were content-analyzed for theme and purpose. RESULTS: Of the 6,990 emails, the greatest proportion was generated by Malboro (62.3%), followed by Newport (13.0%), Black & Mild (8.2%), Camel (5.3%), and Skoal (3.4%). Of the 1,646 emails that were content-analyzed, contest promotion was the most commonly identified email purpose across all brands (54.1%). Promotion of web content was also common, with 33.1% of emails promoting content that included videos, music downloads, and recipes on the tobacco company’s website. Fewer emails promoted coupons (15.7%). Emails that promoted menthol-flavored tobacco (n=615) were nearly two times more likely to promote coupons than those that did not (PR=1.90, 95% CI:1.52-2.37). Other observed email purposes included new product promotion (6.6%), birthday/holiday greeting (4.3%), and promotion of a tobacco industry event (4.2%). CONCLUSION: Email is a common direct marketing tool that is used in a variety of ways to promote brand loyalty. Unlike direct mail marketing that focuses on coupons, email marketing is designed to actively engage the tobacco user through contests and interactive web content. Further research is needed to understand the consumer experience of receiving email marketing from the tobacco industry.

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POS2-32
FDA-PROPOSED WARNING LABEL ON ELECTRONIC CIGARETTES: PERCEPTIONS AMONG U.S. ADULTS, 2015
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INTRODUCTION: The FDA has proposed regulations deeming all products meeting the definition of tobacco products to be under their authority, including electronic nicotine delivery systems (ENDS). As part of regulation, ENDS will be subject to the following proposed warning: this product contains nicotine derived from tobacco. Nicotine is an addictive chemical. This study examined how US adults perceived the proposed warning label. METHODS: In August 2015, we conducted an online survey among 1,814 US adults, using Amazon Mechanical Turk—an online crowdsourcing platform, the survey included questions on use of ENDS and the proposed warning label. After viewing the warning label, survey participants were asked whether they believed the information to be true; and to express their perceived risk of ENDS. ANOVA and t tests were used to determine whether participants’ perceptions of the proposed label differed by cigarette and ever ENDS use status. RESULTS: Believability of the warning label was high across all groups (mean=9.1). The effect of viewing the warning label on attitudes towards ENDS significantly varied by ever use ENDS and cigarette smoking status. EVER users (mean=4.1) and current smokers (mean=4.2) expressed more positive attitudes than never users (mean=2.4) and never smokers (mean=2.3). Perceived risk of ENDS after viewing the warning label varied significantly by ever use of ENDS and smoking status with never users and never smokers having higher risk perceptions. CONCLUSIONS: Although warning label believability was universally high, response varied by ENDS use and smoking status. For those most likely to view the warning (ENDS users and smokers), the label has minimal influence on their perceived risk of ENDS.
ELECTRONIC CIGARETTE PROMOTION ON TWITTER
AN ANALYSIS OF QUANTITY AND CONTENT OF THREE-YEAR ELECTRONIC CIGARETTE PROMOTION ON TWITTER

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BACKGROUND: Recent studies have examined ENDS marketing on Twitter but have generally been limited to examine a subset of related tweets. The ENDS market has evolved rapidly and little is known about how marketing practices on Twitter have changed over time. We examined three years of ENDS content on Twitter to fill this critical research gap. METHODS: Via GNIP we retrieved all tweets that matched a list of ENDS keyword rules from January 1, 2012 through December 31, 2014. Two waves of data collection were used. Insights from Wave 1 informed a more robust list for Wave 2. Supervised machine classifiers were applied to first identify ENDS-related tweets, then differentiate between commercial and organic content. Keyword rule filters were used to further characterize themes including: health, cessation, and discounts. RESULTS: Total monthly tweet volume varied greatly from a minimum below 100,000 tweets to a peak of over 1,000,000 tweets. The overall trend indicates increased content about ENDS on Twitter over time. For relevance classification, our first round support vector machine (SVM) algorithm using a human-coded training set of 7,000 tweets achieved an F1 score of .947 and marked about 86% of tweets from Wave 1 as relevant to ENDS. A separate SVM algorithm trained by human coding of 5,000 twitter accounts marked 58% of accounts as commercial (F1 score .965). Content filters indicated that health and cessation claims were slightly higher among organic tweets while discounts were vastly more common among commercial tweets, with nearly 50% of commercial tweets containing discount promotions. CONCLUSION: Twitter continues to be a platform for a large volume of commercial ENDS content, typically linking to sales or affiliate websites; however, organic discussions have overtaken commercial content in the context of the products' rapidly increasing popularity. Closely monitoring ENDS content on social media platforms such as Twitter is warranted. The large volume of commercial ENDS content has important policy implications for potential future FDA, state and local level policies related to ENDS marketing and promotion.

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POS2-35 CORRELATES OF REACTIONS TO PUBLIC SMOKE-FREE POLICIES AND SMOKE-FREE HOME POLICY ADOPTION IN THE REPUBLIC OF GEORGIA

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Despite the ratification of the FCTC, the Republic of Georgia has limited tobacco control policies, particularly smoke-free public policies, implying substantial secondhand smoke exposure (SHSes). Thus, we examined 1) overall receptivity to public smoke-free policies; and 2) smoke-free home policy status among Georgian adults. We conducted a national household survey of 1163 Georgian adults aged 18-65 years conducted in Spring 2014. A multi-stage clustered sample design with stratification done by region was used. We assessed sociodemographics, smoking status, and the aforementioned outcome variables. Our sample was on average 42.41 years old (SD=13.58), 51.1% male, and 43.2% urban. Current smoking prevalence was 54.2% in men and 6.5% in women. While 93.5% agreed that SHSes is harmful, 42.2% reported daily SHSes. In public, past week SHSes was 26.8% (n=312) in workplaces; 29.9% (n=348) in indoor public places; and 33.0% (n=384) in outdoor public places. The majority reported no opposition to smoke-free public policies across the various settings. The greatest opposition was to restaurants, bars, and outdoor; none of these two settings in the general population exceeded 34% and in smokers (exceeding 68%). Multivariate analyses indicated that predictors (P

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POS2-34 PROVIDER PERSPECTIVES ON INTERNATIONAL TRAINING IN TOBACCO TREATMENT: ACCESS, QUALITY, AND PERSPECTIVES ON POLICY

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Few training programs exist outside of the U.S. and a few other advanced-economy nations. Little data exists on the training experiences and/or needs of providers in middle/lower-income countries. Training programs tend to follow advanced-economy models and guidelines, which may fail to address unique country cultural use patterns and resources. The ATTUD-ITC conducted an internet-based survey of providers outside of the U.S. to better understand access to training, quality of training, and ways to tailor training to respondents’ country conditions. The study was conducted in a convenience/snowball sample recruited via listserves (ATTUD; ENSH Global; Global Bridges) and word-of-mouth. Items were adapted from existing surveys and included closed- and open-ended questions. The survey was created in English, translated into Spanish and Portuguese, and disseminated via urls embedded in email messages. All study technology was open source, including Enkelo Smart Paper for the form, fornbud for data collection, and R for quantitative analysis. The 168 respondents represented 46 countries. They included physicians (40%) nurses (15%) psychologists (13%) community health workers (7%) and others (25%). Respondents learned how to treat dependence via online courses (73%), training in their health profession (65%) and other information on the web (52%). About half (53%) estimated they had received less than 6 hours of instruction. Nearly half (41%) reported their access to training to be poor to nonexistent. Most (54%) reported their countries had national guidelines for tobacco treatment. Barriers to providing care included the cost/coverage of medications and counseling; and lack of evidence in how to best treat light smokers/smokeless/shisha users. Recommendations for country guidelines included expediting revision to keep up with evidence; encouraging governments to mandate implementation; and disseminating them better. English online courses are the main training mode for international providers. Recommendations offered by respondents should be considered by lower-income countries and external entities seeking to support the diffusion of evidence-based tobacco treatment.

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Poster Session 2  •  Thursday, March 3, 2016  •  4:30 p.m.- 6:00 p.m.
POS2-36  ELECTRONIC CIGARETTES ON HOSPITAL CAMPUSES
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BACKGROUND: Smoke and tobacco-free policies on hospital campuses have become more prevalent across the U.S. and Europe, de-normalizing smoking and reducing secondhand smoke exposure on hospital grounds. Concerns about the increasing use of electronic cigarettes (e-cigarettes) and the impact of such use on smoke and tobacco-free policies have arisen, but to date, no systematic data describes e-cigarette policies on hospital campuses. METHODS: The study surveyed all hospitals in North Carolina (n=121) to assess what proportion of hospitals have implemented e-cigarette policies, how policies have been implemented and communicated, and what motivators and barriers have influenced the development of e-cigarette regulations. RESULTS: Seventy-five hospitals (62%) completed the survey. Over 80% of hospitals reported the existence of a policy regulating the use of e-cigarettes on campus and roughly half of the hospitals without a current e-cigarette policy are likely to develop one within the next year. Most e-cigarette policies have been incorporated into existing tobacco-free policies with few reported barriers, though effective communication of e-cigarette policies is lacking. The majority of hospitals strongly agree that e-cigarette use on campus should be prohibited for staff, patients, and visitors. DISCUSSION: Most hospitals in North Carolina have been incorporated into existing tobacco-free policies with few reported barriers, though effective communication of e-cigarette policies is lacking. The majority of hospitals strongly agree that e-cigarette use on campus should be prohibited for staff, patients, and visitors. 

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POS2-37  STANDARDIZED TOBACCO ASSESSMENT FOR RETAIL SETTINGSTRIIBAL COMMERCIAL TOBACCO (STARS-TCT) IN NAVAJO NATION
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Cigarettes are manufactured, marketed and sold by American Indian tribes, and very little is known about how they are advertised and sold. Because tribes are sovereign nations, they are not required to follow the laws of the states in which they reside, though tribes have developed agreements that allow states to obtain information on sales and in some cases to sell cigarettes at a price comparable to the state. Few investigators have made the attempt to obtain more information about tribal tobacco sales. Several reasons exist for this, including the lack of researcher knowledge of, and access to tribes, learning needed to work with tribes because of differing cultural perspectives and the need for various types of tribal approvals before collecting data. OBJECTIVES: The main innovation is to study systematically the dissemination and implementation of the first standardized surveillance tool for retail tobacco marketing that was designed for practitioners to inform state and local tobacco control policy efforts. STARS for Tribal Commercial Tobacco (STARS-TCT) will create the first instrument to gather surveillance information about the largest tribally manufactured tobacco brands, and will test the full STARS instrument, including the STARS-TCT addendum, in tribal tobacco retail outlets. METHODS: After obtaining consent from the store manager or equivalent, a variety of data were collected from stores that sell tobacco on Navajo tribal lands as well as in stores near tribal lands for comparison. Data collected include photographs of all the tobacco products sold in the store and survey data on product placement, advertisements, etc. RESULTS: Data was collected from 20 retailers located on the Navajo Nation, including two trading posts, two grocery stores, and 16 gas stations. In addition, data were collected from 10 retailers close to but outside of Navajo Nation lands, including 20 retailers who refused to sign the consent form. Through our observations no tribally produced tobacco products were sold, however, e-cigarettes and smokeless tobacco were sold. It was noticeable that there were more e-cigarette advertisements inside the stores than cigarettes and smokeless tobacco advertisements. Smaller retailers such as the two trading posts only sold smokeless tobacco due the managers not having enough employees to assist with the paperwork that is required by the tribal tax commission in order to sell cigarettes. Summaries of the tobacco products, product placements and advertisements will be presented.

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POS2-38  DISTINCT TOBACCO INDUSTRY INFLUENCES IN A STATE LEGISLATURE
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Lobbyists who represent tobacco companies or tobacco company trade associations serve a uniquely destructive industry. The three largest U.S. tobacco companies were found guilty of multiple violations of the federal Racketeer Influenced and Corrupt Organizations (RICO) Act. Each of these companies retain lobbyists to represent them at the Oklahoma Legislature. The Oklahoma lobbyists for Altria and Reynolds American, Inc. guide disbursements of campaign contributions from political action committees (PACs) funded by the respective companies’ corporate offices. In addition, most tobacco lobbyists in Oklahoma make campaign contributions in their own names. Internal tobacco industry documents suggest that some tobacco lobbyists have received pay increases to encourage such contributions, thereby enhancing their influence while circumventing Oklahoma state ethics laws. Lobbyists in Oklahoma also provide gifts (typically meals) to legislators. This paper examines the respective influences of the three distinct sources of tobacco money provided to individual Oklahoma legislators: contributions from tobacco company PACs disbursed by tobacco lobbyists; contributions in their own names; and gifts from tobacco lobbyists. Public records of these transactions were compiled and published in searchable databases on a website (tobacco-money.com). Activities related to two major tobacco-related legislative initiatives were observed. Analyses of voting behavior controlled for party affiliation. Significant associations with voting behavior were apparent for each of the three distinct sources. The strongest association was between votes on a pro-tobacco industry bill and gifts from tobacco lobbyists. Legislators receiving the highest combined amounts of campaign contributions and gifts from tobacco lobbyists performed the key actions necessary to advance tobacco industry objectives. Perceived by media outlets as relevant to the tobacco-related legislation, data published on tobacco-money.com received extensive print and electronic news coverage during the study period. Raising public awareness of tobacco industry influences may diminish their effects.

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POS2-40  ATTITUDES TO OUTDOOR SMOKEFREE POLICIES IN THE USA AND CANADA
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OBJECTIVE: To review the published survey data on public support for smokefree outdoor regulations in the USA and Canada (two countries at the forefront of such policies). Data sources and study selection: We searched for English language articles and reports using Medline, Google Scholar, and Google for the period from January 1993 to December 2014. We retained population-based surveys of the adult general population in jurisdictions in the USA and Canada, with a minimum survey sample size of 500 respondents. Analysis: The analysis focused on assessing levels and trends in public support for smokefree policies in different settings and also explored how support varied between population groups. RESULTS: Relevant data were found from 89 cross-sectional surveys between 1993 and 2014. Support for smokefree regulations in outdoor places tended to be highest for smokefree school grounds (range: 57% to 95%) playgrounds (89% to 91%), and buidling entrances (45% to 89%) and lowest for smokefree outdoor workplaces (12% to 46%) and sidewalks (31% to 49%). Support was lower among smokers, though for some types of places there was majority smoker support (eg, school grounds with at least 77% support in US state surveys in 2000). In 25 surveys, mental support from smokefree school grounds was 83%. Trend data involving the same questions and the same surveyed populations suggested increased general public and smoker support for smokefree regulations over time (eg, from 67% to 78% during 2002 to 2008 for smokefree school grounds in the USA). The median support for smokefree outdoor events in the surveys increased from 20% in 1993-99, to 56% in 2010-13. Men were less supportive of smokefree outdoor regulations.
than women in all 51 results where gender attitudes were reported. Support was generally lower from Whites compared to other ethnic groups, and from those aged less than 65 years, compared to those aged 65 plus. Support in Canadian jurisdictions was generally higher than the USA (outside of California). Support in California and Ontario was generally higher than in the rest of USA and Canada. Conclusions: Outdoor smokefree regulations can achieve majority public support, including from smokers. The substantial and growing public support for outdoor smokefree regulations indicates the increasing opportunities for politicians to move on such regulations, and the better chance of their effective implementation.

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**POS2-41**

**CHINA’S TOBACCO-FREE CAMPUS POLICY ON COLLEGE CAMPUSES – EVIDENCE FROM A SURVEY OF COLLEGE STUDENTS IN BEIJING**

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OBJECTIVE: China issued a nation-wide Tobacco-Free Campus Policy (TFCP) in January 2014, but it is unclear as to how well it was implemented across China’s 2138 college campuses. We conducted an internet survey of Beijing college students to evaluate the implementation of the TFCP. METHODS: An internet survey of 711 students from 37 colleges in Beijing was conducted in May 2015. Respondents reported on secondhand smoking (SHS) exposure on campus and in other social contexts, and tobacco marketing exposure on campus and in general media. They also answered items that assessed their current and past cigarette smoking behavior, and susceptibility to future smoking. RESULTS: The current smoking rates were 15.9% among male students and 1.5% among female students. More than one third of never-smokers were susceptible to smoking, and 78% smokers believed that they would quit by age 40. Approximately 37% of non-smokers and 61% of smokers reported seeing a teacher smoking, and the majority of both smokers and non-smokers reported seeing a fellow student smoking in school buildings. Overall, 76.7% of respondents were exposed to SHS on campus at least once in the past month. Forty-Seven students from 14 colleges noticed tobacco marketing activities on campus. CONCLUSIONS: The TFCP on Chinese college campuses was only partially enforced, particularly with regard to SHS.

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**POS2-42**

**GEORGIA RESTAURANT AND BAR OWNERS AND MANAGERS RECEPTIVENESS TO ALLOWING ELECTRONIC NICOTINE DELIVERY SYSTEM USE IN THEIR ESTABLISHMENTS**

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INTRODUCTION: The Georgia Smokefree Air Act prohibits cigarette smoking inside most public places and sets guidelines for allowing cigarette smoking in and around public establishments. However, the law does not regulate the use of electronic nicotine delivery systems (ENDS) in enclosed public workplaces, including restaurants and bars. This study assesses if Georgia restaurant and bar owners and managers would allow ENDS use in their establishments and examines restaurants with bar owners and managers that are associated with allowing ENDS use. METHODS: Data were obtained from a cross-sectional survey, designed to gather information about Georgia restaurant and bar smoking policies, of restaurant and bar owners and managers conducted in 2012 in Georgia. Weighted analyses were performed to assess the percentage of restaurant and bar owners and managers that would allow ENDS use in their establishments and associations with other characteristics. RESULTS: In 2012, 25.0% of Georgia restaurant and bar owners and managers stated that they would allow ENDS use in their establishment, whereas, 58.3% would not allow ENDS use and 16.7% did not know if they would allow ENDS use. Having a liquor license was a significant predictor of allowing ENDS use in a restaurant or bar. Allowing cigarette smoking, having seats for dining outdoors, having seats for drinking outdoors, employee preference of a smokefree environment, and the cost of a typical meal were not significant predictors of allowing ENDS use in a restaurant or bar. DISCUSSION: The use of ENDS in public places such as restaurants and bars may pose a significant public health risk because the aerosol emitted from the devices contain a number of unregulated constituents that might harm the health of users and non-users. In addition, allowing ENDS use in public places may re-normalize cigarette smoking, reversing decades of gains in tobacco control in the United States. State policy makers should include restrictions on ENDS use in their existing smokefree laws. In addition, education on the harms of ENDS use should be targeted to owners and managers of establishments that have characteristics associated with allowing ENDS use.

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**POS2-43**

**USING THE TRANSTHEORETICAL MODEL TO EVALUATE A STATEWIDE TOBACCO TAX INCREASE**

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Cigarette taxation is an evidence-based tobacco control policy. Yet outcome research on cigarette tax increases has primarily considered only point prevalence rates and mortality. A dearth of population-based research has utilized health behavior theory to evaluate a full range of smokers’ behavior following a tobacco tax. Smoking prevalence is a crucial outcome, but it lacks nuanced dimensions of behavior change. As the transtheoretical model (TTM) notes, individuals quit smoking in successive stages, individual characteristics influence progression through stages, and the majority of at-risk populations are not prepared for action or behavior maintenance. We apply TTM to an evaluation of Minnesota’s 2013 tobacco tax. The state of Minnesota implemented a $1.60 cigarette tax increase in 2013, one year prior to a 2014 population-based survey of Minnesota adults (Minnesota Adult Tobacco Survey [MATS]), providing a unique opportunity to study tax-related behavior change. Sample comprised individuals from the 2014 MATS who were smokers at time of tax (N=1,619). Analyses on retrospective self-report measures were: 1) weighted prevalence rates of TTM stages of change due to tax (0=no change, 1=contemplation, 2=preparation, 3=action, 4=maintenance); 2) bivariate associations; and 3) propensity score matching analysis that assesses a) propensity to reach maintenance and b) 30-day point prevalence rates post-tax for individuals who reach maintenance. Roughly 65% of smokers reported behavior change post-tax, with 23% and 21% reaching action and maintenance stages, respectively. Bivariate results showed that individual characteristics were related to progression through stages of change. Propensity score matching showed a -24 difference in 30-day smoking rates post-tax for maintenance versus non-maintenance individuals, 95% CI [-34,-08]. Most smokers reported moving through at least one stage of change due to tax, but only 21% achieved maintenance. Those who reported that the tax helped them reach maintenance were more likely to be abstinent at time of follow-up. Applying TTM to a statewide tobacco tax offers implications for prevention and evaluation efforts.

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POS2-44
THE WORLD’S FIRST REGULATED LEGAL MARKET FOR NEW PSYCHOACTIVE SUBSTANCES – RELEVANCE TO TOBACCO CONTROL?
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AIM: We considered the implications for tobacco control of a law passed in New Zealand to establish the world’s first regulated legal market for “low-risk” psychoactive products (Psychoactive Substances Act [PSA] 2013) such as synthetic cannabinoids. METHODS: In August 2015 we reviewed published literature commenting on the legislation and performed selective media searches covering the two years since the PSA was passed. RESULTS: The passing of the PSA is suggestive that policy-makers can demonstrate innovative thinking with regard to drug legislation (only 1 out of ~120 parliamentarians didn’t vote for it). Some of the main specific components of potential relevance to tobacco control laws include: - Putting the onus on product manufacturers to demonstrate scientifically to an “Expert Advisory Committee” that any modified products or brands pose only a low risk of harm. - Detailed licensing requirements and comprehensive restrictions on retail supply. - Code of manufacturing practice and strict auditing capacity. - Tight restrictions on sale and marketing (including internet sales). - Requirements on health and safety labeling and packaging of approved products. But there is a lack of real world experience with this law given that no new psychoactive products (NSP) have been approved and the major local NSP producer has gone into liquidation. The planned transitional regime allowing a limited number of NSPs and controlled sales was problematic because of adverse effects from products on users, and public and media concern. The transitional regime was ended abruptly in a 2014 law amendment that also prohibited use of animal testing to demonstrate a “low risk” of harm. Nevertheless, the PSA may have reduced harm as emergency psychiatric services reported fewer incidents associated with synthetic cannabinoids following the reduced availability of these products in the months after the PSA was passed (NZ Med J 2015;128(1414)). CONCLUSIONS: This new law has a number of features that could potentially be applied to new tobacco control legislation. It is regardless of its inability to date to facilitate a legalized market in new psychoactive substances.
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POS2-45
GEOGRAPHIC REGION AND STATE TOBACCO EXCISE TAX AS PREDICTORS OF AIDED VERSUS UNAIDED CESSION ATTEMPTS
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BACKGROUND: Despite the availability of evidence-based treatments for smoking cessation, the majority of smokers who attempt to quit do so unaided. A number of studies have demonstrated that regional factors including geographical location and state-level tobacco control policies (e.g., taxation) are associated with both quit attempts and cessation. However, whether these factors influence likelihood of using cessation treatment is unclear. We examined both U.S. Census region and state-level tobacco taxation as predictors of using a cessation aid. We also provided detailed analysis of individual-level predictors of cessation method and utilization of cessation methods by state. METHODS: Collating data from two large, nationwide studies, participants included 2,368 adult smokers (66.3% Female; Age (M(SD) = 49.1(12.2), cigarettes/day (CPD; (M(SD)) = 19.7(9.0)). Base- line questions assessed participant demographics, participant location (state, zip code), CPD, time to first cigarette, history of quit attempts, and previous methods used to quit smoking. State excise tax rates were derived from publically available data. RESULTS: We dichotomized cessation aid use as yes/no, and utilized hierarchi- cal logistic regression to examine the effects of geographic region and taxation on use of treatment, controlling for individual level predictors of treatment use. Region was a significant predictor of using a cessation aid, such that individuals residing in New England were significantly more likely to have used a cessation aid than individuals residing in any other U.S. region (OR = 1.53, p = 0.03). Addition- ally, higher taxation was associated with an increased likelihood of using a cessation aid (OR = 1.13, p = 0.01). Separate analyses predicting use of specific treatment options (medication vs. behavioral vs. quittines) will be available at conference proceedings. CONCLUSIONS: Population-level interventions such as taxation may exert their effects on cessation via increased likelihood of using cessation aids.
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POS2-46
ATTITUDES TOWARD PROHIBITING THE USE OF ELECTRONIC NICOTINE DELIVERY SYSTEMS IN INDOOR PUBLIC PLACES AMONG U.S. ADULTS, 2015
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Public electronic nicotine delivery systems (ENDS) use has the potential to expose bystanders to nicotine and other potentially harmful constituents, renormalize to- bacco use, and complicate smokefree policy enforcement. As of August 2015, 7 states and over 350 localities include ENDS in their comprehensive smokefree laws prohibiting smoking in indoor areas of worksites, restaurants, and bars. We assessed data from the 2015 Summer Styles survey, a consumer-based web sur- vey of U.S. adults aged 18 or older (n=4,127). Respondents were asked, “Do you favor or oppose prohibiting the use of electronic cigarettes (e-cigarettes), elec- tronic hookahs (e-hookah), vape pens or other electronic vapor products in indoor public places such as workplaces, restaurants, and bars?” Response options included “strongly favor”, “somewhat favor”, “somewhat oppose”, and “strongly oppose.” Descriptive statistics were calculated overall and by sex, age, race/ethnicity, education, income, U.S. region, cigarette smoking status, and e-cigarette use status. Logistic regression was used to determine adjusted odds ratios (OR). The findings indicate that 37.7% of adults “strongly” and 23.8% “somewhat” favor the idea, compared to 61.6% of former and 50.6% of current smokers. By e-cig- arette use status, 63.7% of never users “strongly” or “somewhat” favor the idea, compared to 50.8% of former and 44.8% of current users. Following adjustment, the odds of “strongly” or “somewhat” favoring the idea were significantly higher among adults with incomes of $40,000-$59,999 (OR:1.4) and adults in the West (OR:1.4); odds were significantly lower among adults with incomes of $15,000-$24,999 (OR:0.7), current cigarette smokers (OR:0.6), and former (OR:0.6) and never e-cigarette users (OR:0.5). A majority of U.S. adults favor prohibiting ENDS use in indoor public places. Including ENDS in comprehensive smokefree laws could protect bystanders from exposure, reinforce smokefree-free norms, and aid smokefree policy enforcement.
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POS2-47
REDUCED RELATIVE HARM PERCEPTION AND USE OF EMERGING TOBACCO PRODUCTS AMONG U.S. MIDDLE AND HIGH SCHOOL STUDENTS, 2013
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BACKGROUND: All tobacco products are harmful. However, several tobacco de- sign, packaging, and marketing features may enhance tobacco product appeal and instill perceptions of reduced relative harm. We examined the association between perceptions of reduced relative harm with ever and current use of three emerging tobacco products—flavored cigars, hookahs, and electronic cigarettes— among U.S. middle and high school students. METHODS: Data were from the 2013 National Youth Tobacco Survey- a nationally representative survey of US students in grades 6-12. Analyses were restricted to never cigarette smokers (n=13,220). Respondents were asked if they believed the three tobacco products assessed (flavored cigars, hookahs, and electronic cigarettes) were less harmful than cigarettes, and if they ever (≥1 in their lifetime) or currently (≥1 in past 30 days) used each product. Multivariable logistic regression was used to assess the association between reduced relative harm perception and use of each product, adjusting for sex, age, and race/ethnicity. Statistical significance was assessed.
POS2-48
NEW ZEALAND ADOLESCENTS’ DISCOURAGEMENT OF SMOKING AMONG THEIR PEERS

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BACKGROUND: Cigarette use among New Zealand (NZ) adolescents remains a critical issue if we are to reach our national Smokefree 2025 goal. Social norms are a strong determinant of behaviour, and if students actively discourage smoking among their peers, there may be a positive impact on deterring smoking behaviour. The aim of this research is to both investigate students’ discouragement of smoking and identify potential variables associated with such discouragement.

METHOD: The study data come from the 2014 NZ Youth Insights Survey undertaken with 2919 Year 10 (age 14-15 years) high school students. Participants were asked six specific questions about their discouragement of smoking at school which were used to construct a composite “Discouragement” score ranging from 0 to 6. Associations between Discouragement and current smoking, demographic, school decile, peers smoking, smokefree education, participation in smokefree sponsored events, exposure to celebrity smokefree messages, and awareness of the 2025 Smokefree goal were investigated using both multiple logistic and multiple linear regression.

RESULTS: Approximately 49% of students discourage smoking in other students at some level. Being a current smoker and female, having more smoking peers and more recognition of celebrity smokefree messages, exposure to smokefree education, and participation in a smokefree event were all associated with an increased probability of discouraging smoking.

CONCLUSION: Students who promote smoking among their peers, there may be a positive impact on deterring smoking behaviour. The aim of this research is to both investigate students’ discouragement of smoking and identify potential variables associated with such discouragement.

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POS2-50
VAPE STORE OPERATORS’ TAKE ON VAPING POLICIES — QUALITATIVE STUDY ACROSS SEVEN CITIES IN THE U.S.

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Electronic nicotine delivery systems (ENDS) are growing in popularity and their market share has increased rapidly. The ENDS market is largely unregulated; new products are introduced and sold to consumers through vape stores and other outlets. This study aims to provide insights into barriers to implementation of current and future proposed FDA regulations on ENDS and how it might affect vape shop marketing practices. We conducted 37 in-person interviews of vape shop operators (i.e., managers and owners) across seven US cities: Atlanta; Chicago; Henderson; Los Angeles; San Jose; Ventura County, and Oklahoma City. Vape shops were identified through extensive web searches. Each interview lasted 45–60 minutes. We used a qualitative analytic method to examine vape shop operators’ attitudes toward proposed regulations, including the distribution of free e-juice samples, promotion of new products, and availability of flavored e-juice products. The vape shop operators were 81% male, 19% female and 76% white, 19% Asian/ Pacific Islander, and 5% Hispanic. Many vape store operators were supportive of
regulation requiring safe production of e-juices, child-resistant bottles, and listing e-juice ingredients. They were opposed to the elimination of free samples and to banning the sale of flavored e-juices, which generates significant revenue for their stores. They did not fully support pre-market review of new product lines. Some felt that the tax rate on e-cigarettes should be lower than that placed on tobacco products, which they believe cause much greater harm; while others opposed any additional taxation on their products. Store owners felt that vaping restrictions in restaurants should be handled by the individual business owners and not through government regulations. They agreed that ENDS should not be sold to minors, but felt that minors should be able to visit vape shops and that the store owners should not be fined. This study has implications for tobacco product marketing regulation; in particular, for effective implementation and enforcement of policy, it may be worthwhile to collaboratively involve vape store owners in the decision-making process.

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POS2-52 LEVERAGING NATIONAL TOBACCO USE PHONE SURVEY DATA TO INFORM FDA POLICY

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The passage of the 2009 Family Smoking Prevention and Tobacco Control Act has necessitated the execution of timely, innovative, and policy-relevant tobacco research to inform FDA regulatory efforts. With recent dramatic changes to tobacco product availability and use patterns, nationally representative data on tobacco-related perceptions and behaviors are vital. To explore issues related to FDA tobacco regulatory authority and risk communication, the Center for Regulatory Research on Tobacco Communication (CRRTC) conducted a 20-minute phone survey with a national sample of Americans. Administered in both English and Spanish, the survey assessed tobacco product use and perceptions, demographic factors, general health status, government organization-related credibility perceptions, and anti-tobacco media campaign exposure among adults ages 18 and older. We sampled random-digit-dial landline and cell phone frames that covered ~98% of US households, with oversampling of regions with historically higher rates of tobacco use and poverty. Respondent driven sampling (RDS) for cigarette smokers and GLBs increased analytic power for those subgroups. The final weighted response rate for the non-RDS sample was 42%, reflecting 5014 completed surveys. Response rates, demographic characteristics, and tobacco use estimates are largely comparable to other current national estimates. For instance, the unweighted prevalence of smokers in our sample was 23.0% (n = 1151); however, the weighted estimate was 17.8% (SE=0.93), which matches cigarette smoking estimates from previous large nationally representative surveys (CDC, 2015). A number of informative associations amongst the variables were found. For example, the weighted prevalence of non-cigarette tobacco product (NCTP) use was much higher among smokers (46.2%) than non-smokers (12.7%), indicating that smokers are particularly likely to initiate NCTP use. Nationally representative survey data are an important tool for assessing tobacco-related attitudes and beliefs, tobacco use, and perceptions of the FDA. Such data can provide an evidence base to support FDA regulation and can help monitor the impact of new regulations over time.

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POS2-53 THE IMPACT OF TOBACCO RETAIL OUTLETS ON SMOKING CESSATION: THE EFFECTS OF PROXIMITY, THRESHOLD, AND DENSITY IN A LONGITUDINAL POPULATION REPRESENTATIVE COHORT

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INTRODUCTION: Despite the dangers associated with use, tobacco is widely available for sale with few limitations or restrictions on locations of sale. The availability of tobacco is thought to influence smoking behavior, but few longitudinal studies exist that examine the prospective association of tobacco outlet on smoking cessation. METHODS: The Ontario Tobacco Survey, a population-representative sample of 4500 Ontario adult smokers who were followed every 6 months for up to three years. Home addresses were linked with tobacco outlet location data from the Ontario Ministry of Health. For each individual, proximity to the closest tobacco outlet, threshold of distance to an outlet (existence of an outlet within 250m, within 500m, or further), and density (number of outlets within 500m) were calculated. Proximity and density were square root transformed. Interval censored survival analysis was used to examine time to relapse among those who made a quit attempt. Associations were adjusted for neighbourhood effects and individual smoking and demographic characteristics. RESULTS: Among males, proximity to a tobacco retail outlet was associated with a 34% increase (Hazard ratio (HR): 1.34; 95% CI: 1.15, 1.56) in the risk of relapse. Density (increase in number of outlets) was also independently associated with an increased risk of relapse after
**POS2-54**

**THE RECENT TREND OF WARNINGS IN PRINT ELECTRONIC NICOTINE DELIVERY SYSTEM ADVERTISEMENTS**

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**BACKGROUND:** Advertising of electronic nicotine delivery systems (ENDS) has been growing considerably in recent years. Meanwhile, tobacco companies have put out strong ENDS health warnings. In a pilot study, we collected ENDS ads in print from 2010 onwards to study the recent trend of warnings in these ads.

**OBJECTIVE:** This study aims to assess the recent trend of warnings in ENDS print ads, and to inform the FDA about future regulatory actions related to ENDS advertising.

**METHODS:** Warnings were coded using a range of values and in a way that reflects their strength/appeal. These values were further weighted using the ad size, insert, circulation, and expenditure of that ad reported in the Kantar Media data, and aggregated to monthly averages for the years 2010-2015 to carry out the study. Sensitivity analyses were conducted by assigning alternative values to ensure the validity of the coding.

**FINDINGS:** ENDS ads grew exponentially over time from a total of 74 magazine ads in 2012 to 459 ads in 2014, and the strength of warnings in these ads had remained very low until the FDA published their deeming proposal in April 2014, after which a hike towards warnings with a higher strength was seen. **CONCLUSION:** Warnings in ENDS print ads were stronger after the announcement of the FDA deeming proposal in April 2014. Future research is needed study how these warnings impact risk perceptions and ENDS use outcomes.

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**POS2-55**

**ASSESSING THE ASSOCIATION OF SMOKE-FREE LEGISLATION AND TOBACCO TAXATION WITH GENDER EFFECT ON SMOKING PREVALENCE: A LONGITUDINAL COMMUNITY STUDY**

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**INTRODUCTION:** Taiwan implemented a series of tobacco policies in 2009, including a stricter smoke-free legislation (SFL) since January as well as a boost of excise taxation from 10 to 20 TWD per pack of cigarette in June. This study aims to evaluate the impact of above policies and their relation with gender effect on reducing smoker prevalence. **METHODS:** We used data from the Integrated Community Screening Project (ICSP) to examine the smoking rates in different gender from 2007 to 2010 and their association with the implementation of stricter SFL and taxation boost in 2009. **RESULTS:** The indicator was participant’s self-reported smoking status, categorized in to never, current and ex-smoker. We modeled the probability of current smokers with logistic regression while controlling other variables including participant’s age, year of enrollment, place of residence, year after implement of SFL and household disposable income (HDI).

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POS2-57

DOCTOR ADVICE ABOUT NICOTINE IN THE CONTEXT OF E-CIGARETTES – OBSERVATIONAL CONTENT ANALYSIS FROM AN ONLINE DIGITAL HEALTH SITE

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The FDA has requested evidence-based recommendations for regulation of nicotine content and exposure warnings in e-cigarettes (EC). EC devices heat liquid, often containing nicotine, for inhalation. We conducted a content analysis of US licensed doctors’ answers to anonymous patients’ questions concerning EC posted to a digital health service, HealthTap, between 6/2010 - 6/2015. We thematically coded questions and answers and aggregated by doctor and specialty. We coded doctors’ attitude toward EC overall and nicotine specifically as negative, positive, or neutral. We also examined providers’ positive endorsements (“Agree”) with their peers, an option on HealthTap. We identified 512 patient questions with 748 answers and 627 “Agrees” from 368 doctors in 37 specialties. Most patients asked about EC safety (81%, 413/512); few asked about nicotine-free EC (14%, 73/512) or nicotine generically (5%, 26/512). Nearly half of doctors were coded as neutral in attitude toward EC overall (48%, 178/368), though 34% (123/368) preferred EC to cigarettes, and 22% (83/368) saw EC as an effective aid for quitting combustibles. Notably, a sizeable minority (19%, 72/368) stated the available evidence on EC was insufficient for clear recommendations. When asked about nicotine-free EC, fewer doctors expressed negative attitudes (26%, 17/66). Nearly half of doctors (44%) addressed nicotine directly, most stating it was unsafe (62%, 101/162) with 54% identifying adverse physiologic effects, 18% addiction, and 17% both, while 10% gave no specific reason. Identified physiologic effects included complications to pre-existing medical conditions, vasotoxicity, heart damage, impaired wound healing, stimulant effects, poisoning, and death. Specialties most concerned with nicotine were OB/GYN (40%, 4/10), pediatrics (31%, 9/29), and dentistry (29%, 10/33), and responses from 26% (6/29). Doctors’ views of EC largely centered on concerns with nicotine. With rapid expansion of the EC market an FDA focus on regulation of nicotine rather than multifaceted and rapidly evolving EC products would likely better address medical concerns and preemptively anticipate future needs.

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POS2-58

HOW ARE THEY GETTING THEM?

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BACKGROUND: The legal age to possess and use tobacco products in the State of Utah is 19. Underage youth caught with tobacco products are subject to a fine and are required to complete the Ending Nicotine Dependence (END) course. The END course is taught at locations throughout the state and covers topics relevant to tobacco cessation. The study was done in Davis County Utah which is located just north of Salt Lake City. It is considered a bedroom community and suburb with a large number of residents working in Salt Lake City. Davis County is home to 329,692 residents with roughly 110,776 residents under the age of 18. Recent data suggest that cigarette and other smokeless tobacco use is decreasing while the use of electronic cigarettes is rapidly increasing. It is estimated that roughly 18% or nearly 20,000 youth under the age of eighteen tried electronic cigarettes in 2014.

METHODS: At the completion of the month long END course the students in Davis County Utah were asked to complete an anonymous exit survey. The survey was given at the end of the course after some report had been established between the students and the teacher. The survey was brief (7 questions) with questions designed to determine what the students gained from the class and how they acquired their tobacco as well as their cigarette products. It was hypothesized at the initiation of the study that the majority of students were receiving tobacco products through purchase either locally or in the case of electronic cigarettes through online stores. RESULTS: Many of the students indicated that they obtained cigarettes, electronic cigarettes, and other tobacco product through a number of ways; Friends over the age of 19, friends under the age of 19, family members, and purchase were listed as options. When electronic cigarettes were discussed, online sales was another available option. Several observations clearly demonstrated the most popular ways that underage youth acquire tobacco products. Seventy three percent of the youth surveyed (N=26) indicated that they acquired tobacco products through a friend over the age of 19. Fifty two percent of the students in the class indicated that they receive cigarettes and products only through friends over the age of 19. Twenty five percent of the students indicated that they only received electronic cigarettes from friends over the age of 19.

CONCLUSION: Initially it was hypothesized that underage youth were getting their tobacco product through purchase. However, it is clear that underage youth are getting their tobacco products primarily through friends who are legally able to purchase tobacco products. The findings suggest that public policy restricting individuals under the age of 21 from purchasing tobacco products would greatly reduce underage access and consumption of tobacco.

The small sample size was a limitation to generalizability of the study.

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tobacco prices, sales and marketing differ between pharmacies and other types of retailers. METHODS: We conducted store audits at 2277 tobacco retailers located within 97 US counties in 40 states to assess cigarette prices, marketing, and tobacco product availability. Retailers were categorized into four groups for statistical comparisons: pharmacies (n=226), non-pharmacies with a pharmacy counter (n=172), tobacco shops (n=78), and all other types (n=1801). Significance level was set at p<0.05. RESULTS: Median price for Marlboro Red was significantly lower in pharmacies ($5.74) compared to non-pharmacies with a pharmacy counter ($6.19) and other store types ($6.92). Median price for Newport Green was also significantly lower in pharmacies ($6.24) compared to non-pharmacies with a pharmacy counter ($6.88), but not significantly different from that of tobacco shops and other store types. Pharmacies were more likely to sell cigars, and less likely to sell e-cigarettes, compared to most retailer types. Nearly all pharmacies (91%) sold cigars, and slightly more than half sold e-cigarettes (57%). Although both products were available in nearly all tobacco shops, prevalence of cigars and e-cigarettes in non-pharmacies with pharmacy counters and other store types ranged from 65%-76%. Price promotions were advertised in significantly more pharmacies than any other retailer type. Interior price promotions for Marlboro Red were displayed in 81% pharmacies, but fewer than 50% of stores in any other category. Similarly, almost half of pharmacies (48%) advertised interior price promotions for Newport Green, compared to almost 9% of non-pharmacies with a pharmacy counter, and fewer than 30% of other store types. CONCLUSIONS: Compared to most other types of tobacco retailers, pharmacies advertised lower prices for Marlboro Red, displayed more interior cigarette types. CONCLUSIONS: These findings suggest that increased exposure to e-cigarette advertising may weaken support for such policies.

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**POS2-61**

**THE RELATIONSHIP BETWEEN USE OF FLAVORED TOBACCO PRODUCTS, PRODUCT APPEAL, AND QUIT ATTEMPTS: FINDINGS FROM A SURVEY OF U.S. ADULT TOBACCO USERS**

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BACKGROUND: Non-menthol characterizing flavors (ex: fruit, candy) are banned in cigarettes, yet are permitted in non-cigarette tobacco (NCT) products. Prior studies have focused on the links between characterizing flavors, cigarette smoking initiation, and quit behaviors, but few have extended these concepts to flavored NCT products. This study examined associations between first use and current use of a flavored tobacco product, and reports of current flavored tobacco use and quit behaviors. METHODS: A telephone survey was completed in 2012 by 1,443 adult tobacco users, who were asked about use of 9 tobacco products: cigarettes, e-cigarettes, cigars, cigarillos, little filtered cigars, pipes, hookah, smokeless tobacco, and snus. Ever users reported first use of flavored products, while current users reported current flavored product use. Current users were asked about quit attempts made in the past 12 months and intention to quit. Data were weighted to reflect the U.S. adult tobacco user population. Logistic regression models were used to examine associations between first/current flavor use and quit behaviors. RESULTS: Over 70% of respondents reported first use of a flavored tobacco product, while 45% reported current use of a flavored product. 75% of current flavored product use were greater among those who reported first use of a flavored product (OR: 14.73, 95% CI: 9.92, 21.88). Compared to single product users, polytobacco users were more likely to report current use of flavored products (OR: 2.00, 95% CI: 1.41, 2.84). Seventy-three percent of respondents reported intention to quit using tobacco, while 44% of respondents made a quit attempt within the past year. Adjusted analyses found no association between flavored tobacco product use and quit behaviors. Conclusions: In this study, first use of a flavored tobacco product was associated with current flavored tobacco use and polytobacco use. Such findings can inform future regulatory actions to limit added flavorings in tobacco products. The relationship between characterizing flavors and quit behaviors merits further exploration in population-based samples.

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**POS2-62**

**RECALL OF E-CIGARETTE ADVERTISING AND POLICY BELIEFS AMONG YOUTH AND YOUNG ADULTS**

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BACKGROUND: While research has begun to explore e-cigarette policy beliefs among adults, little is known about policy support among adolescents. The present study seeks to examine e-cigarette policy beliefs among adolescents and young adults, as well as the impact of e-cigarette advertising on these beliefs over time.

METHODS: Data come from an ongoing prospective observational study under the U Penn TCORS, collected from June 2014–July 2015 via phone interviews (T1) with 13-25 year olds (n=4116), of which 762 completed 6-month follow-up interviews (T2). E-cigarette policy support was assessed by questions about banning vaping in places where smoking is banned (PLACES), and not allowing youth under 18 to purchase e-cigarettes (YOUTH), with responses on a 4-point scale (strongly disagree to strongly agree). Exposure to e-cigarette ads was assessed by how often (0-100 times) respondents had seen or heard ads promoting e-cigarettes through media sources over the past 30 days. Regressions are adjusted for potential confounders, and exposure was transformed to a natural log. In all analyses, responses are weighted to the population. RESULTS: The majority of both 13-17 year old (73%) and 18-25 year old (88%) respondents at T1 agreed or strongly agreed with the PLACES policy (difference p<.01). The vast majority of younger and older respondents agreed or strongly agreed with the YOUTH policy (86% and 87% respectively). At T1, recall of ad exposure was negatively associated with support for PLACES (r=-0.08) and remained significant after controlling for potential confounders. Recall of ad exposure was not significantly associated with support for YOUTH (r=-0.01). Among those recontacted, lagged analyses indicated that exposure to more e-cigarette advertising at T1 predicted decreased support for at least one flavored product policy at T2. After adjusting for confounders, these coefficients were not significant, overall or for either age subgroup. CONCLUSIONS: Youth and young adults exhibited high levels of support for anti-e-cigarette policies. However, these findings suggest that increased exposure to e-cigarette advertising may weaken support for such policies.

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**POS2-63**

**ANALYSIS OF HEALTH WARNINGS ON ELECTRONIC NICOTINE DELIVERING SYSTEMS FROM THE U.S. MARKET**

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SIGNIFICANCE: Electronic nicotine delivering systems (ENDS) are currently unregulated products in the US. In June 2015, the FDA released notice that it intends to start requiring nicotine exposure warnings and child-resistant packaging for nicotine-containing electronic liquid products. The purpose of this study was to analyze the packaging of various ENDS in order to examine the current warnings, safety labels as well as determine if child resistant packaging is present. METHODS: We purchased 105 products, including various ENDS products and e-liquids from various regions of the US as well as from online shops. Products were analyzed for the presence of 48 categories of warnings. The categories included warning for: intended users (e.g. keep from children), nicotine related (e.g. contain nicotine), disclaimers (e.g. not FDA approved), health related (e.g. not for persons with health problems), product storage (e.g. keep from heat) and emergency as well as ingestion (e.g. do not drink). Each warning and label category was assigned a numerical code and the total number of products containing each label or warning was determined. RESULTS: All analyzed e-liquids had child-resistant packaging. The majority (85%) of the products had warnings about nicotine content, the unintended use of the products (72%), and listed any relevant disclaimers (e.g. not FDA approved) (62%). Over half of the products (52%) had warnings and labels related to women’s health (e.g. not for women who are pregnant). One in three products had warnings on cardiovascular risk (37%). The other categories of warnings included indication on the product use and storage (31%), how to proceed in
case of an emergency (27%), and instructions about the emergency action in case of accidental poisoning from product ingestion (6%). CONCLUSIONS: Our study revealed inconsistencies in the labeling of different brands and types of ENDS and e-liquids. The majority of the analyzed products were compliant with the proposed FDA regulation. All of the e-liquids had child-resistant packaging. However, warnings and indications about the proper use and storage of the products were often absent across the products.

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POS2-64

TOBACCO GROWING AND THE UNITED NATIONS POST-2015 DEVELOPMENT AGENDA: THE EXAMPLE OF MALAWI
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The negative impact of tobacco is not limited to its consumption but also includes its production, which has mostly moved to lower and middle income countries (LMICs), and has effects beyond those on health. Malawi, the world’s largest producer of burley tobacco, and one of the poorest countries in the world, is particularly hard-hit by multiple negative consequences of tobacco. In countries like Malawi, tobacco control does not primarily mean control of tobacco consumption, but rather the control of the supply chain of tobacco. The issues are not only those of preventing tobacco-related diseases and deaths but include a country’s economic dependence on tobacco, its negative health impact related to tobacco growing, families trapped in a cycle of poverty, and environmental degradation. We review the negative impacts of tobacco cultivation on a country. We use Malawi, the economically most tobacco-dependent country in the world, as an example of the issues that need to be tackled in the health, economic, social, and environmental realms in African tobacco-growing countries. We place these problems in the context of the UN Post-2015 Global Development Agenda and the Sustainable Development Goals (SDGs). We discuss how low-resource tobacco producing countries stand to benefit from being part of that agenda. Not only do the SDGs give a prominent position to the Framework Convention on Tobacco Control (FCTC) within health-related goal 3 and act as a catalyst for tobacco control, but many of the remaining 16 goals are directly related to the negative effects of tobacco cultivation on development. Being part of the FCTC might not be a sufficient motivator for successful tobacco control implementation in LMICs. However, the FCTC presents a huge incentive to implement the policies embedded in the treaty. The SDGs stress the importance of the implementation of the FCTC and offer a new opportunity for LMICs that are dependent on tobacco production, and particularly those that have not yet become FCTC parties – like Malawi – to reconsider signing on to the treaty.

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POS2-65

EFFECTIVENESS OF PICTORIAL HEALTH WARNINGS IN INDIA: FINDINGS FROM THE TCP INDIA SURVEY
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BACKGROUND: The implementation of pictorial health warnings (PHWs) in India has gone through a series of delays and dilution. PHWs have remained at 40% of the front of tobacco packs since 2009, with only minor changes to the images in December 2011 and April 2013. The aim of this study is to provide evidence of the low effectiveness of current health warnings in India and demonstrate the need to push forward with implementing stronger health warnings. METHODS: Data from the Tobacco Control Policy (TCP) Evaluation Project in India, a cohort survey of 8,000 tobacco users and 2,400 non-users in four states: Maharashtra, West Bengal, Bihar, and Madhya Pradesh. The Wave 2 Survey was conducted from October 2012-September 2013, after the 2011 PHWs were introduced and partially after the 2013 PHWs were introduced. The impact of these two rounds of PHWs on smokers’ cognitive and behavioural responses was examined, and compared with findings from Wave 1 (2010-2011), when the initial 2009 warnings were in place. RESULTS: Compared to Wave 1, more smokers were aware of the health warnings on smoked tobacco packs at Wave 2 (93% vs 89%), but fewer smokers reporting noticing or reading the warnings “often” in the last month at Wave 2, indicating a decline in salience of the warnings. Moreover, after the April 2013 warnings change during Wave 2, awareness and noticing the warnings at least once both decreased (from 94% to 92%; and from 81% to 77%). There was little change in the percentage of smokers who said warnings made them think about health risks or more likely to quit, or who avoided the warnings from Waves 1-2, and before and after the 2013 warnings. Those who were aware of the warnings were more likely to be smokers, male, younger, more educated, and from Maharashtra and Madhya Pradesh compared to the other two states CONCLUSIONS: The findings indicate that the small changes in PHWs in 2011 and 2013 had little effect on salience or behavioural impact of the warnings on smokers in India. These findings point to the need to increase the effectiveness of health warnings in India by implementing larger PHWs with a range of messages about the harms of tobacco use without delay, as proposed by the Ministry of Health in 2014.

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POS2-66

DEBUNKING THE TAX - CONTRABAND MYTH
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The tobacco industry has consistently claimed that high taxes drive contraband tobacco. Government policy indicates large buy-in to this claim. Does increasing tobacco tax necessarily increase contraband? To debunk the myth, we assess findings from the literature and present data on tobacco taxes and contraband in Ontario and Canada. The literature shows that the contraband tobacco issue is generally overstated. Increasing tobacco taxes leads to decreased tobacco consumption and increased tobacco tax revenues, even when there is some leakage to smuggling. Many other factors (such as easy access, insufficient law enforcement, misconception of “legal” purchase of cigarettes from First Nations’ reserves, organized crime, and corruption) may be more important than tobacco taxes and prices in determining contraband activities. Recent Ontario and Canadian data show that contraband tobacco has been declining, while tobacco taxes and prices have been slightly increased or stable, suggesting that tobacco taxes are not the major factor in contraband tobacco in Ontario or Canada. Lowering tobacco taxes is not the solution to the contraband tobacco issue. The best policy option should be to increase tobacco taxes, accompanied by enhanced enforcement and control of contraband tobacco.

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POS2-67
CIGARETTE FLAVORS IN 13 LOW- AND MIDDLE-INCOME COUNTRIES: ARE TOBACCO COMPANIES EXPERIMENTING WITH HOW TO CIRCUMVENT BANS ON “CHARACTERIZING” FLAVORS?

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The U.S. FDA bans cigarettes with candy-, fruit- and other “characterizing” flavors, with the exception of tobacco and menthol. We set out to identify the extent of flavors advertised on cigarette packs in low- and middle-income countries and whether tobacco companies are communicating about flavors in innovative ways that might not be covered by the ban. Cigarette and kretek packs were systematically purchased in 13 countries in 2013: Bangladesh, Brazil, China, Egypt, India, Indonesia, Mexico, Pakistan, Philippines, Thailand, Turkey, Ukraine and Viet Nam. In each country we bought one of every unique cigarette pack from a sample of vendors in 36 low, middle, and high socioeconomic areas of three major cities. Two independent coders assessed whether there were words and/or imagery on the pack denoting a flavor. Descriptive statistics were conducted using Stata14. 2,730 packs were purchased and coded for flavor-related words and imagery; of these, 230 were kretek with 99% indicating clove flavoring. Of the 2,500 cigarette packs, 479 (19%) had at least flavor, 165 had both clove and tobacco flavor, 398 (3%) had at least one flavor-related image, 207 (8%) of cigarette packs had “menthol” flavor stated on the pack, and an additional 31 had “mint” flavor. 72 (3%) of cigarette packs listed a fruit or citrus flavor; 13 (1%) had an alcoholic beverage flavor. Other flavors identified included caramel, vanilla, chocolate, cinnamon/candied/spice, coffee, and energy drink. Some words that are normally not considered a flavor were paired with the word “flavor”: “Enriched Flavor” (n=4), “Flavor of Unity” (n=3), “Core Flavor” (n=1), and “MX4 Flavor” (n=1). Some packs used the word “taste” instead of flavor; for example, we saw packs with “cool refreshing taste”, which may be a substitute for menthol flavor. Flavors are extensively communicated on cigarette packs in the 13 low- and middle-income countries examined. The word “flavor” is sometimes paired with words that are not normally considered a recognizable flavor. It is important for public health groups and regulators to be aware of ways in which tobacco companies might try to circumvent product requirements.

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POS2-68
ESTIMATION OF DIFFERENT PRICE ELASTICITIES OF CIGARETTES IN ROMANIA

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The purpose of this study was to examine the factors relating to cigarette consumption in Romania over the last decade. The factors examined included: the number of tax-free cigarettes smoked, the total number of cigarettes consumed, the total number of cigarettes consumed per smoker, and the number of cigarettes consumed per adult. These factors were estimated using a multiple regression model. The results of the regression analysis indicated that the number of tax-free cigarettes smoked, the total number of cigarettes consumed, and the total number of cigarettes consumed per smoker were significantly associated with the number of cigarettes consumed per adult. The results also showed that the number of cigarettes consumed per adult was positively associated with the number of tax-free cigarettes smoked, the total number of cigarettes consumed, and the total number of cigarettes consumed per smoker. These findings suggest that the number of cigarettes consumed per adult is a significant factor influencing cigarette consumption in Romania over the last decade.
gap between high and low priced tobacco products and encouraging some smokers to downtrade to cheaper products rather than quitting. Less is known about retailer profits. To explore this, we (1) asked managers of small retail shops about their tobacco sales and profits and (2) analysed the tobacco trade retail press for references to these issues. METHODS: Interviews with 32 retailers in Newcastle and 30 in London and a scan of the retail trade press during the interview period (2014). RESULTS: The majority of retailers reported 4-6% overall profit, with some mentioning lower profits for price-marked packs, economy brands (1-6%) and higher profits for premium brands (7% to over 10%). A few mentioned higher profits for e-cigarettes and some were unsure. The majority thought tobacco sales were important (90.3%), and agreed that their reliance on tobacco sales was due to footfall (80.6%), i.e., customers purchasing tobacco also purchasing other products. 41.9% of retailers expressed interest in reducing their reliance on tobacco sales. Whilst most reported no changes to tobacco sales, 38.7% reported a change in brand/product mix, including: increase in sales of cheaper tobacco products, such as price marked packs and roll-your-own tobacco, and smaller pack sizes, with some reporting an increase in e-cigarette sales. Examination of the retail trade press revealed Ti emphasis on the importance of cigarette sales for generating footfall, and a lack of a discussion of the profits made from tobacco, citing actual retailer profits only when discussing premium and higher profit brands. CONCLUSION: Small retailers report low profits from tobacco, but high reliance on tobacco sales because of footfall. This reflected the Ti emphasis on footfall rather than profit in the retail press. Retailer interest in reducing reliance on tobacco sales warrants scrutiny of footfall claim.

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POS2-72

AN ASSESSMENT OF RELATIVE RISK PERCEPTIONS ACROSS NON-COMBUSTIBLE TOBACCO AND NICOTINE PRODUCTS: IMPLICATIONS FOR PUBLIC HEALTH POLICY

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BACKGROUND: In recent years, the rapid evolution of the tobacco/nicotine market, including the emergence of products with varying associated health risks, has created new challenges for public health. To date, there has been no systematic examination of evidence concerning consumer perceptions across the tobacco/nicotine spectrum. Consequently, efforts to assist smokers in making informed decisions may be of limited utility for those considering non-smoking or smoking alternatives. The objectives of this review are: to synthesize the evidence on relative risk perceptions (RRPs) across non-combustible tobacco/nicotine products; to describe measures of RRPs; and to discuss implications for public health policy. METHODS: A scoping review conducted using MEDLINE and PsycINFO databases in October 2014 yielded 5,266 records. Of these, articles not published in English that did not quantitatively assess RRPs across categories of tobacco/nicotine products were excluded. One reviewer extracted measures and findings of RRPs for product comparisons involving smokeless tobacco (SLT), e-cigarettes, nicotine replacement therapy (NRT), and cigarettes. RESULTS: A total of 157 samples from 54 studies were included in the analyses. Overall, most respondents held misperceptions about the relative harms of SLT vs cigarettes and of e-cigarettes vs NRT; most did not know the relative harms of SLT vs NRT; and most correctly perceived NRT and e-cigarettes as less harmful than cigarettes. Cigarette smokers and users of non-combustible tobacco/nicotine products tended to correctly perceive the relative harms of products more often than non-users. Measures of RRPs are variable, with different approaches characterized by certain strengths and limitations. Perceptions of relative risk are amenable to change and may serve as targets for health interventions. CONCLUSIONS: The highly variable and context-specific nature of non-combustible tobacco/nicotine product RRPs have direct implications for researchers and policymakers working with modified risk products following the passage of the Family Smoking Prevention and Tobacco Control Act, including issues of measurement, health risk communication, and behavior change.

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strong tobacco marketing restrictions, tobacco is retailed ubiquitously throughout the country. Previous work identified 5,008 tobacco retail outlets in NZ, one for every 129 smokers. Existing research has produced inconsistent findings on the relationship between density of tobacco outlets around a school and increased risk of smoking among school students. Youth smoking rates have been declining in NZ for some time, but to meet the government's goal of a smokefree nation by 2025, further effective strategies are needed. Data on known tobacco outlets were used to map retail outlets with Geographic Information Systems; a layer of secondary school locations was obtained from Koordinates.com. Student smoking data came from the 2012 ASH year 10 survey, the largest survey of youth smoking rates in NZ. We used logistic regression to examine associations between outlet density and student smoking behaviours. We found an inverse relationship between the density of tobacco retail outlets around their school high. Policy makers need to address the density of tobacco retail outlets around schools, by restricting the density or distance that tobacco retail outlets are permitted around schools as part of a comprehensive innovative tobacco control programme. The Government appears to be lagging behind both smokers and non-smokers who support the introduction of increased regulations of the tobacco retail environment to achieve our national smokefree goal. Funding: ASH New Zealand receives Funding from a combination of Ministry of Health contracts, membership fees and donations from organisations. The Cancer Society Social and Behavioural research unit is supported by the Cancer Society of New Zealand and the University of Otago. LR is supported by a New Zealand Lottery Health Scholarship. 

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POS2-75 EVALUATION OF COMPLIANCE IN PUBLIC PLACES AND WORKPLACES AFTER SEVEN MONTHS OF IMPLEMENTATION OF THE SMOKE-FREE LAW IN BANGLADESH

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INTRODUCTION: Bangladesh Smoking and Tobacco Product Usage Act 2013 bans tobacco use in some public places and workplaces, such as healthcare facilities and educational institutions, and specific forms of public transport. However, the law allows for designated smoking areas in other public places but with strong requirements. PURPOSE: The main purpose of this study was to assess the level of compliance with the smoke-free law within five key public places in Bangladesh after 7 months of implementation. METHODS: An observational monitoring compliance study was conducted in five divisions in Bangladesh (Chittagong, Dhaka, Rajshahi, Rangpur, and Sylhet) during November and December 2014. Data was collected from a convenience sample (n=1,224) of the following five types of public places, where smoking was banned: educational institutions, health care facilities, workplaces, restaurants, and transport buildings. An observational checklist was developed and data collectors observed the following law requirements: No persons smoking indoors, no smoking facilitators of indoor smoking (cigarette or bidi butts, ashtrays, or matchsticks), presence of no smoking signage, presence of appropriate no smoking signage. RESULTS: Among the public places monitored throughout Bangladesh, overall level of compliance was as follows: No persons smoking indoors was observed in 83%; smoking facilitators were not observed in 71%; signage indicating that smoking is prohibited was present in 75%, but only 14% of the places fulfilled all the requirements by law; and there were no designat- ed smoking areas observed in all public places monitored. The level of compliance within the provisions of the smoke-free law varied by division. Public transport buildings had the lowest level of compliance across all divisions. RECOMMENDATIONS: Establish a comprehensive standardized reporting and monitoring system to ensure effective implementation of the law at the national and sub-national levels; and properly inform the individuals responsible for the public places of the provisions of the smoke-free law, including the requirements of appropriate no smoking signage. Funding: Bloomberg Initiative to Reduce Tobacco Use

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POS2-74 PREVALENCE OF SMOKING IN PUBLIC VENUES AND SUPPORT FOR SMOKE-FREE REGULATIONS AMONG SMOKERS AND NON-SMOKERS: FINDINGS FROM THE ITC AFRICAN COUNTRIES

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BACKGROUND: Exposure to tobacco smoke has been linked to several diseases in adults, including asthma and bronchitis in children. Article 8 of the FCTC requires countries signatories to adopt effective comprehensive measures to protect their public from exposure to tobacco smoke. This study examined the prevalence of smoking and support for smoke-free laws in public places among Kenyan, Mauritian and Zambian smokers and non-smokers. METHODS: Data were analyzed from the International Tobacco Control (ITC) Surveys of smokers and non-smokers from Kenya, Mauritius and Zambia (N=4,251). This was a face-to-face interview of a nationally representative probability sample of smokers and non-smokers aged 18 years and older. Questions about noticing smoking in public venues and level of support for a smoking ban were asked. RESULTS: The prevalence of bars and tobacco smoke was highest in Kenya (83%) and Zambia (70%) and lowest in Mauritius (45%). More workplaces in Zambia (31%) had tobacco smoke than those in Mauritius (23%) and Kenya (22%). There was less presence of smoke in restaurants (Mauritius=14%, Kenya=12%, Zambia=6%) and in public transporta- tion (Mauritius=12%, Zambia=5%, Kenya=2%). Overall, the support for a smoke-free law among smokers was high for restaurants (Zambia=94%, Mauritius=91%, Kenya=84%), workplaces (Mauritius=95%, Zambia=88%, Kenya=78%), and public transport (above 94% in all countries). However, support was lowest for bars in Kenya at 36% (Zambia=72%, Mauritius=82%). CONCLUSIONS: These findings indicate that there is strong compliance to the smoking ban on public transportation and restaurants in these countries. Lower levels of compliance are found in workplaces. Support for a smoking ban among smokers in these three countries is high except for bars in Kenya. Overall, there is a need for a comprehensive smoking ban with no exceptions. The very high support indicates that governments should strengthen their enforcement of smoke-free laws to increase their effectiveness. There is also need for more public education on the dangers of secondhand smoke to increase the support for a comprehensive smoking ban.

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POS2-76 COMMON PREDICTORS OF QUIT INTENTIONS AMONG KENYAN AND ZAMBIAN SMOKERS: FINDINGS FROM THE ITC PROJECT

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BACKGROUND: Having a quit intention is the strongest predictor of quit attempts and successful quitting. Most studies of quit intentions are from Western countries; almost none have been conducted in Sub-Saharan Africa, a region where smoking rates are increasing. This study examines the prevalence and predictors of quit intentions among smokers in Zambia and Kenya. METHODS: Data were analyzed from the International Tobacco Control (ITC) Wave 1 Surveys in Kenya and Zambia. The main purpose of this study was to assess the level of compliance with the smoke-free law within five key public places in Bangladesh after 7 months of implementation. RESULTS: Among the public places monitored throughout Bangladesh, overall level of compliance was as follows: No persons smoking indoors was observed in 83%; smoking facilitators were not observed in 71%; signage indicating that smoking is prohibited was present in 75%, but only 14% of the places fulfilled all the requirements by law; and there were no designated smoking areas observed in all public places monitored. The level of compliance within the provisions of the smoke-free law varied by division. Public transport buildings had the lowest level of compliance across all divisions. RECOMMENDATIONS: Establish a comprehensive standardized reporting and monitoring system to ensure effective implementation of the law at the national and sub-national levels; and properly inform the individuals responsible for the public places of the provisions of the smoke-free law, including the requirements of appropriate no smoking signage. Funding: Bloomberg Initiative to Reduce Tobacco Use

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analyses were used to determine the predictors of quit intentions among smokers. RESULTS: 40% of Kenyan smokers and 43% of Zambian smokers had ever tried to quit. Only 17% of Kenyan and 24% of Zambian smokers planned to quit within the next 6 months. Factors associated with quit intentions in both countries were: being younger, having medium income, being less nicotine dependent, having a previous quit attempt, having a previous quit attempt of longer duration, perceiving that quitting is beneficial, and worrying about future health consequences of smoking. Gender, education, and country were not associated with quit intentions. Only 35% of Kenyan smokers and 33% of Zambian smokers who had accessed healthcare reported receiving advice to quit; of those, 82% of Kenyans and 71% of Zambians reported that the advice made them think about quitting. CONCLUSION: Smokers in Kenya and Zambia were less likely to intend to quit compared to other ITC Countries (e.g., Brazil=43%; Canada=32%). Predictors of quit intentions in both countries were similar to Western countries. Since quit intentions are strongly linked to future quit attempts, policymakers in Kenya and Zambia can use these key predictors as outcomes to evaluate their tobacco control policies and programs. Kenyan and Zambian smokers were least likely among 11 ITC LMICs to quit among smoking-only and dual-tobacco user households. These findings suggest a link in healthcare providers on the important role they could play to increase motivation to quit among their smoking patients.

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**POS2-77 MONEY GONE UP IN SMOKE: TOBACCO USE AND MALNUTRITION NEXUS IN BANGLADESH**

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The tobacco epidemic in Bangladesh is pervasive. Nearly half of the adult population (43%, or 41 million persons) uses tobacco in smoking and/or smokeless form. According to the Food and Agriculture Organization of the United Nations, during 2010-12, 17.3% (26.5 million persons) of the total population in Bangladesh was undernourished. It is important to understand the role that reducing tobacco use could contribute to reducing malnutrition. We analyzed data from the 2010 Household Income and Expenditure Survey from Bangladesh, a nationally representative survey conducted among 12240 households, to quantify the opportunity costs of tobacco expenditures in terms of food-energy forgone; the opportunity cost of smoking-only was being younger, having medium income, being less nicotine dependent, having a previous quit attempt, having a previous quit attempt of longer duration, perceiving that quitting is beneficial, and worrying about future health consequences of smoking. Gender, education, and country were not associated with quit intentions. Only 35% of Kenyan smokers and 33% of Zambian smokers who had accessed healthcare reported receiving advice to quit; of those, 82% of Kenyans and 71% of Zambians reported that the advice made them think about quitting. CONCLUSION: Smokers in Kenya and Zambia were less likely to intend to quit compared to other ITC Countries (e.g., Brazil=43%; Canada=32%). Predictors of quit intentions in both countries were similar to Western countries. Since quit intentions are strongly linked to future quit attempts, policymakers in Kenya and Zambia can use these key predictors as outcomes to evaluate their tobacco control policies and programs. Kenyan and Zambian smokers were least likely among 11 ITC LMICs to quit among smoking-only and dual-tobacco user households. These findings suggest a link in healthcare providers on the important role they could play to increase motivation to quit among their smoking patients.

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**POS2-78 THE IMPACT OF THE WHO FCTC ON THE IMPLEMENTATION OF STRONG TOBACCO MEASURES AND THE REDUCTION OF GLOBAL TOBACCO SMOKING PREVALENCE**

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BACKGROUND: Since the WHO Framework Convention on Tobacco Control (WHO FCTC) came into force in 2005, some of the 180 Parties have made great progress in tobacco control. To assist countries with implementing the FCTC, WHO has focused on evidence-based demand reduction measures badged by WHO under the acronym (M)POWER. (M)POWER encompasses monitoring and surveillance (Article 20), smoke-free environments (Article 8), health warnings on packaging and public education campaigns (Articles 11 & 12), promotion of cessation (Article 14), bans on tobacco advertising, promotion and sponsorship (Article 13), and raising of tobacco taxes (Article 6). OBJECTIVES: This study is a qualitative synthesis of tobacco smoking prevalence trend estimates and the progress in implementation of WHO FCTC MPower measures over the last 10 years. METHODS: Tobacco smoking prevalence data are based on fitting a Bayesian meta-regression using a negative binomial model using WHO databases (2015 WHO Report). POWER measures were counted and summed (on a 5-point scale) using the WHO Report on the Global Tobacco Epidemic, 2015. RESULTS: Since the FCTC came into force, many countries have implemented some aspects of (M)POWER; some have implemented at the highest level of achievement and others at low levels. Since 2005, of the 117 countries that had data available, 88 countries are estimated to have decreased in tobacco smoking prevalence, and 27 countries increased. The greatest decreases have been in countries with strong tobacco control measures (16 of these 88 countries have implemented at least 3 measures at the highest level). Among the countries with an increase in smoking prevalence, most - 15 of 27 - have implemented at relatively low levels. CONCLUSIONS: The WHO FCTC currently covers about 90% of the world’s population. While the treaty may be legally binding, in which Parties must be committed to the Convention to develop and implement a series of evidence-based tobacco control measures in order to reduce tobacco use, many countries do not fulfill their WHO FCTC obligations and/or have not implemented all (M)POWER measures. Among the many countries with the greatest improvements in tobacco smoking prevalence estimates, most have very strong and progressive tobacco control policies. Thus, based on the evidence presented herein, national tobacco control policies should be strongly implemented and enforced to the highest FCT standards by WHO FCTC Parties.

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**POS2-79 THE LOW LEVEL OF AWARENESS OF KENYAN TOBACCO USERS ABOUT THE HARMs OF TOBACCO USE: FINDINGS FROM THE ITC KENYA PROJECT**

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BACKGROUND: Studies from high-income countries show that knowledge of the health harms of tobacco is a key predictor of quitting among smokers. However, there is a scarcity of research on knowledge of health effects of tobacco use in sub-Saharan African countries like Kenya. Kenya’s text-only warnings on cigarette packs do not comply with WHO FCTC Article 11 Guidelines, and there are few public education campaigns on the harms of tobacco use. This study examines the knowledge of harms of tobacco use among Kenyan tobacco users. METHODS: Data were analyzed from the International Tobacco Control (ITC) Kenya Wave 1 Survey (2012)—a nationally representative sample of 1,427 tobacco users aged 15 and older. The survey included questions about various diseases attributable to tobacco use, sources of anti-tobacco messages, purchase of single cigarettes, and knowledge of the harms of tobacco use. RESULTS: The majority of Kenyan smokers were aware of the harms of tobacco use (81%) and knew about the risks of lung cancer (74%), heart disease (71%), and lung disease (69%). However, only 17% of smokers knew about the risks of mouth cancer. CONCLUSIONS: While the majority of Kenyan smokers are aware of the harms of tobacco use, there is a need for increased public education campaigns to improve awareness of the harms of tobacco use, particularly for the risks of mouth cancer.
and support for government to do more to tackle the harms of tobacco. RESULTS: Despite the presence of text warnings, only 38% of smokeless users were aware that smokeless tobacco causes mouth cancer, 65% of smokers were aware that smoking causes heart disease in smokers, and the second-lowest level of awareness among 14 ITC countries. Low percentages of smokers were aware that smoking causes stroke (44%) and impotence (53%). Tobacco packs were rated as the most common source (71%) of information on the dangers of tobacco use. But exposure to health warnings may be lower among smokers in Kenya because 83% of smokers reported that their last cigarette purchase was in single sticks, not by packs. 85% of tobacco users supported stronger action by the government to do more to tackle the harms of tobacco. CONCLUSIONS: Kenyan tobacco users have low awareness of the harms of tobacco use, indicating the low effectiveness of text-only warnings. These findings point to the urgent need for implementing the 2014 Tobacco Control Regulations requiring pictorial health warnings on all tobacco packages. The results also emphasize the need to enforce the ban on the sale of single sticks because of the reduction in exposure to health warnings on packs.

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POS2-80
CIGARETTE HEALTH WARNING LABEL RESPONSES AND DOWNSTREAM SMOKING CESSATION AMONGST ADULT SMOKERS IN AUSTRALIA, CANADA, MEXICO, AND THE UNITED STATES: DOES REACTANCE MATTER?

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INTRODUCTION: Some researchers have raised concerns that pictorial health warning labels (HWLs) on cigarette packages may lead to rejection and reduced effectiveness of HWL messages. This study aimed to determine how state reactance towards HWLs (i.e., negative affect due to perceived manipulation) is associated with cessation-related responses to HWLs and subsequent cessation attempts.

METHODS: Quarterly surveys were conducted between September 2013 and December 2014 with online panels of adult smokers in Australia, Canada, Mexico, and the US. Participants with at least one wave of follow-up were included in the analysis (n=4,072 smokers; 7,459 observations). Surveys assessed psychological and behavioral responses to HWLs in general (i.e., attention to HWLs, thinking about health risks, avoiding HWLs, forgoing cigarettes) and downstream cessation attempts. Participants were also queried about affective state reactance when viewing specific HWLs from their countries. Logistic and linear Generalized Estimating Equation (GEE) models regressed each general HWL response on reactance, while controlling for socio-demographic and smoking-related variables. Logistic GEE models also regressed downstream cessation attempts on reactance along with each HWL response, analyzed separately. For all models, country and reactance were found in all models that regressed general HWL responses on study variables. US smokers with stronger reactance reported more frequent reading of HWLs and thinking about health risks because of HWLs. In all countries, smokers with stronger reactance reported greater likelihood of avoiding HWLs and forgoing cigarettes due to HWLs. Greater reactance and stronger HWL responses were positively associated with subsequent cessation attempts, with no significant interaction between country and reactance. CONCLUSIONS: Reactance towards HWLs does not appear to interfere with quitting, which is consistent with its being an indicator of concern, not a systematic effort to avoid issue engagement.

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POS2-81

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Although there is no safe cigarette, the tobacco industry has a history of using implicit health claims to advertise cigarettes in the U.S., including the now-prohibited terms “light,” “low,” and “mild.” Cigarettes marketed as “organic,” “natural,” and/or “additive-free” have rapidly gained U.S. market share. In August 2015, the Food and Drug Administration (FDA) issued warning letters to manufacturers who market cigarettes as “natural” or “additive-free,” noting that the labels constitute an unauthorized modified risk claim. This study used data from the 2015 Summer Styles survey, a consumer-based web survey of U.S. adults aged ≥18 (n=4,127). Respondents were asked, “Do you believe it is less harmful, equally harmful, or more harmful to smoke cigarettes that are labeled ‘organic,’ ‘natural,’ and/or ‘additive-free’ than to smoke cigarettes that do not have one of those labels?” Response options included: “less harmful,” “equally harmful,” “more harmful,” and “don’t know.” Multivariate logistic regression models were fitted to determine adjusted odds ratios (OR) by sex, age, race/ethnicity, education, annual household income, U.S. region, and cigarette smoking status. Among those who reported that cigarettes labeled “organic,” “natural,” and/or “additive-free” are “less harmful” (n=315), 45.4% were never cigarette smokers, 28.2% were former smokers, and 26.5% were current smokers. Following adjustment, among all adults, the odds of believing that cigarettes labeled as “organic,” “natural,” and/or “additive-free” are “less harmful” (OR: 3.0) and former (OR: 1.9) cigarette smokers than never smokers; odds were lower among adult smokers aged 25-44 (OR: 0.6), 45-64 (OR: 0.5), or 65+ (OR: 0.3) years than those ages 18-24 years. These findings suggest that certain subpopulations, including current and former cigarette smokers and younger adults, are more susceptible to beliefs that “organic,” “natural,” and/or “additive-free” cigarette labels imply reduced harm.

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POS2-82
MOVING INSIDE THE PACK WITH BRANDING ON THE STICK: DATA FROM 13 LOW- AND MIDDLE-INCOME COUNTRIES

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The Framework Convention on Tobacco Control has called for greater restrictions on tobacco marketing and advertising as critical to reducing demand. As other marketing venues become restricted, so the tobacco pack and the stick itself have become more central as branding media and promotional tools. Prior research has found that the appearance of the cigarette can influence perceptions of product harm, appeal, and taste. We sought to identify whether cigarettes sold in low- and middle-income countries include branding elements. Cigarette and kretek packs were systematically purchased in 13 countries in 2013: Bangladesh, Brazil, China, Egypt, India, Indonesia, Mexico, Pakistan, Philippines, Thailand, Turkey, Ukraine and Viet Nam. In each country we bought one of every unique cigarette pack from a sample of vendors in 36 low, middle, and high socioeconomic areas of three major cities. Two independent coders assessed the stick itself for branding elements (brand family name, logo, branding color or patterns, descriptor labels). Descriptive statistics were conducted using Stata14. 2,730 packs were purchased and coded; of these, 2,500 were cigarettes, and 230 were kreteks. Of the 2,730 packs collected, some form of branding on the stick was almost universal (n=2,727, 99.7%). Branding in the form of brand name and color were most common; sticks from 2,448 packs (90%) included the brand name and 2,612 (96%) had color on the stick consistent with branded coloring on the pack. Additional branding elements were also frequently found on the stick: 1,277 (47%) included a brand descriptor (such as lights, menthol or Red) and 900 (33%) displayed a brand logo. Sometimes (n=247, 9%) patterns or designs (such as animal print or flowered patterns) were also carried from the outside of the pack onto the stick to create a common brand. Our analysis shows that the cigarette itself is routinely used as ‘real estate’ for brand messaging.
across these 13 countries. It is important for public health groups and regulators to consider how to reduce the power of stick itself in conveying harmful, misleading messages about the product.

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POS2-83
USING EYE-TRACKING TO EXAMINE HOW EMBEDDING RISK CORRECTIVE STATEMENTS IMPROVES CIGARETTE RISK BELIEFS: IMPLICATIONS FOR TOBACCO REGULATORY POLICY

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For over 50 years, tobacco companies have deliberately used explicit and implicit misleading information in marketing campaigns. In 2006, the U.S. District Court ordered the use of corrective statements in advertising and promotion to enhance knowledge and to correct beliefs about smoking among consumers. Given the fact that many smokers misinterpret the information contained in cigarette marketing, it is important to develop more accurate advertising and counter-advertising campaigns. The correction of these misperceptions requires a better understanding of how accurate information can be conveyed to smokers. The aim of the current study was therefore to investigate whether the correction of explicit and implicit content of a print advertisement improves smokers’ beliefs about the harmfulness of the product and smokers’ knowledge of explicit and implicit information. Using a 2(explicit/implicit) x 2(accurate/misleading) between-subject design, 203 smokers were randomly assigned to one of four advertisement conditions. The manipulation of graphic features was examined as an implicit factor to convey product harm. The inclusion of a text corrective in the body of the ad was defined as the manipulated explicit factor. During ad exposure, we assessed participants’ eye movements to better understand how smokers view explicit and implicit advertisement information. Risk beliefs about the product and the ability to recall information were assessed after ad exposure. Results indicated that exposure to a text corrective decreases false beliefs about the product and improves recall of information provided by the corrective. Accurate graphic features did not successfully convey the harmfulness of the product. Independent of the ad manipulations, smokers who focused longer on the warning label made less false inferences about the product and were more likely to correctly recall the warning information. Nonetheless, most smokers largely ignored the text warning. Embedding a corrective statement in the body of the ad is an effective strategy to convey health information to consumers in print advertisements. These findings provide important evidence for the regulation of cigarette marketing which falls under the FDA’s regulating authority.

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POS2-84
SMOKERS’ AND E-CIGARETTE USERS’ PERCEPTIONS ABOUT POTENTIAL E-CIGARETTE WARNING STATEMENTS

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BACKGROUND: Warning labels on cigarette ads and packages are visible and cost-efficient sources of risk information. However, research on warning labels for other tobacco products is limited. Given the FDA’s intentions to regulate e-cigarettes, the current study collected feedback on a preliminary set of e-cigarette warning statements. METHODS: Six small focused groups were conducted - three with adult current e-cigarette users (n=14) and three with adult current cigarette-only smokers (n=13). Six warning statement concepts were developed from prior research, recommendations, and existing warnings used in the tobacco control community. Participants rated each message’s perceived effectiveness on a 1-5 scale (=not at all effective – 5=very effective) and discussed their ratings with the group. Participants also viewed and discussed two potential “reduced-risk” statements. RESULTS: Participants provided the highest ratings for a statement warning that e-liquid is “poisonous” and that contact with skin should be avoided, noting it was “scary” and “eye-opening”, although some thought it was exaggerated. They also provided high ratings for a statement warning about vapor toxins, particularly when naming specific toxins. Many thought a “not safe alternative to smoking” statement was strong because it would counter perceptions that e-cigarettes are safer, while some e-cigarette users thought this was inaccurate and misleading. Participants had mixed opinions on the FDA’s proposed nicotine addiction warning – while many thought that “everyone already knows nicotine is addictive”, they nevertheless thought it would be important to alert non-users, new users, young people, and parents of young people. The lowest ratings were given to statements warning that e-cigarettes had not been approved for use in quitting smoking and had unknown health effects. Participants were generally skeptical of reduced-risk statements in warnings. CONCLUSIONS: Overall, participants, including current users, thought e-cigarette warnings were important and were able to provide constructive feedback. Additional research into this topic is warranted.

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POS2-85
MAPPING GLOBAL TOBACCO CONTROL ACTIVITIES: A PILOT STUDY OF 2015 WORLD CONFERENCE ON TOBACCO OR HEALTH (WCTOH) ATTENDEES

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Tobacco use is projected to kill up to a billion people by 2100 if preventive measures are not taken, and this has led to increased emphasis on developing a global solution. The FCTC is now ratified in over 170 countries, yet one of the challenges facing this effort is the lack of collaboration and coordination by the tobacco control community worldwide. To that end, we conducted a pilot project survey among 2015 WCTOH attendees to document the communication and collaboration networks of global tobacco control experts who attend the WCTOH, and to analyze the dynamics of these networks. METHODS: An online survey link was featured on the WCTOH website prior to and during conference registration. Additional dissemination of the survey link also occurred through various international tobacco control organization listservs. The link remained open during and immediately after the WCTOH conference in March 2015. The survey was conducted in English and asked about barriers to tobacco control activities, which information sources they use for tobacco control information, and with whom they interact regarding tobacco control. RESULTS: A total of 169 respondents completed the survey, with responses from all six WHO regions. Respondents worked in all areas of tobacco control, but the most common were research (29.2%) and patient care/treatment (23.3%). The top barriers faced regarding tobacco control activities were: Funding is weak (56.8%), government commitment (45.0%), tobacco industry interference (43.8%), and lack of coordination (34.3%). The network analysis identified FCA and SRNT as the two most prominent groups that people belonged to and where they went to exchange information and best practices. Important regional and country specific groups also appear to be growing, such as the African Tobacco Control Alliance (ATCA) and the Argentinian Association of Tabacology (ASAT). DISCUSSION: Mapping and better understanding the global tobacco control network is important for informing knowledge exchange and best practices, particularly as increasing attention is being focused on low- and middle-income countries.

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**POS2-86**

**TOBACCO OUTLETS AND FAST FOOD RESTAURANTS NEAR SCHOOLS IN 97 U.S. COUNTIES: ASSOCIATIONS WITH SCHOOL SOCIO-DEMOGRAPHIC CHARACTERISTICS**

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The availability of tobacco products and fast food near schools might influence youth tobacco use and diet, and greater availability near racially diverse or lower income schools may contribute to racial/ethnic and socioeconomic disparities in cancer risk. No national studies have examined the availability of both tobacco outlets and fast food restaurants near public schools in the United States (U.S.) in association with school sociodemographic characteristics. Tobacco outlets and fast food restaurants were counted within 800 m Euclidean buffers (approximately a 10 minute walk) around public primary, middle and high schools in 97 U.S. counties randomly selected proportionate to county population size. Generalized linear mixed models were used to examine the association of school racial/ethnic composition and participation in free/reduced price lunch programs with tobacco outlet and fast food restaurant availability near schools. Over 70% of schools had a tobacco outlet within 800 m, and nearly 40% of schools had both a tobacco outlet and a fast food restaurant within 800 m. Schools had an average of 6.4 tobacco outlets (SD 2.7) and 0.9 fast food restaurants (SD 1.6) within 800 m. The odds of having both a tobacco outlet and a fast food restaurant within 800 m increased by 5% for every 10% increase in the percentage of Hispanic students (IRR 1.05, 95% CI 1.03, 1.07). Odds increased by 3% for every 10% increase in the percent of students receiving free/reduced price lunch (IRR 1.03, 95% CI 1.01, 1.05). High schools had nearly 1.5 times the odds of having both a fast food restaurant and a tobacco outlet within 800 m compared with primary schools. Low income and Hispanic students, and high school students are disproportionately exposed to both tobacco outlets and fast food restaurants near schools in this sample of 97 U.S. counties. Restricting the location of tobacco retail outlets and fast food in school neighborhoods may help reduce access to products and exposure to ads for harmful products, particularly among some vulnerable populations.

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**POS2-87**

**ATTITUDES ABOUT REGULATION OF E-CIGARETTES**

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BACKGROUND: E-cigarette use and liquid nicotine poisonings of children are increasing while e-cigarette manufacturing, safety, advertising, sales, and use remain largely unregulated. This study examines public support for e-cigarette regulations. METHODS: Using a nationally representative online survey in 2014, we asked about support for various regulations on e-cigarettes and perceptions of harms of e-cigarettes. Chi-square analyses compared responses across smoking status, presence of children in home, age, race, and education. RESULTS: 1519 of 2699 eligible respondents (57%) completed surveys. Most adult smokers and non-smokers supported increased e-cigarette regulation, with lower levels of support coming from current smokers. Parents were more likely to support regulations for government manufacturing/safety standards (94% vs. 87%, p<0.05); more highly educated and older respondents more strongly supported prohibitions on TV/radio advertising and TV/movie product placement; banning fruit, candy, and menthol flavorings; preventing sales to minors; increasing manufacturing/safety standards; child-proof packaging; and accurate nicotine concentration labeling. Adults were more divided in beliefs about e-cigarette harms; 49% believe them to be harmless, 60% think e-cigarettes are harmless to bystanders, and 53% believe e-cigarettes help with cessation. Current smokers believe e-cigarettes are less harmful to users (60% vs. 48% of non-smokers, p<0.05) and can help smokers quit (63% vs. 51%, p<0.05). More educated respondents believe e-cigarettes are more harmful to bystanders (p<0.05) and less likely to help cessation (p<0.05). Laws prohibiting use of e-cigarettes in public places are favored most by older and more educated adults; laws prohibiting use on commercial airlines are favored by older adults, whites, and more educated adults. Conclusion: Strong support for increased e-cigarette regulation presents an opportunity for advocates to work at state/local levels to encourage e-cigarette regulations. FDA action to regulate e-cigarettes to protect public health is likely to have strong public support.

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**POS2-88**


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BACKGROUND: On June 22, 2010, a year after the US Food and Drug Administration (FDA) was given the authority to regulate tobacco products, misleading terms such as ‘light’, ‘mild’ and ‘low’ used on cigarette packaging and in advertising were banned. AIM: To evaluate the impact the ban on misleading product descriptors had on smokers’ beliefs, experiences and perceptions of different cigarettes. METHODS: Data were from Waves 1 to 9 (2002-2013) of the International Tobacco Control Policy Evaluation Study (ITC) survey in the US. Key outcomes analysed were beliefs about the relative harmfulness, self-reported sensory experiences of reduced harshness, and perceptions about the utility of various taste indicators, of different cigarettes, using generalised estimating equation models adjusting for potential confounders. RESULTS: Following the ban on misleading brand descriptors, manufacturers used new descriptors and packaging colour to communicate brand features to consumers. As a result, misperceptions about ‘light’ cigarettes did not show significant change following the ban. Overall, misperceptions that some cigarettes are safer varied by cigarette strength (higher for lower strength cigarette) and brand smoked. Reported experience of cigarettes tasting ‘lighter’ and ‘smoother’ showed a declining trend prior to the ban but trended upward following the ban. Similarly, reported utility of packaging colour, nicotine and tar levels and ‘smooth’ descriptor as indicators of cigarette taste also trended upward following the ban. CONCLUSIONS: The ban on misleading brand descriptors on cigarette packaging and in advertising had little impact on reducing smokers’ misperceptions that some cigarettes are safer. Additional actions are needed by the FDA to ensure that smokers are not misled into believing that some cigarettes are safer than others.

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POS2-89
IMPACT OF CANADIAN TOBACCO PACKAGING ON QUITLINE UTILIZATION: AN INTERRUPTED TIME SERIES ANALYSIS OF CALL VOLUME
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INTRODUCTION: A new set of pictorial health warning labels were introduced by Health Canada in March 2012 and included, for the first time, a quitline toll-free number as part of Canadian tobacco packaging warning label policy. This study uses data from the Ontario provincial quitline to investigate whether there were changes in call volumes and new callers receiving treatment in the months before compared to after the new toll-free quitline number was introduced. METHODS: An interrupted time-series design examined trends in Ontario quitline monthly call volume and new callers receiving treatment between January 2010 and December 2013 after adjusting for the January effect, other promotional campaigns, and tobacco pricing. Data were analyzed using Box-Jenkins autoregressive integrated moving average models. RESULTS: Call volume peaked at 4 months and for the first 7 months after the policy call volume averaged 2,261 calls per month (S.E. 108.94) – a 160% increase over baseline (p < 0.001). There was a 43% relative sustained increase in call volume from 8 months after the introduction of the new warning label policy until December 2013 (baseline 870/ month; 8 months after policy 1242 calls/ month [S.E. 113.54, p < .001]). For new callers, there was a sustained relative increase of 80% in average number of new callers 6 months after the introduction of the new warning label policy (baseline 153/ month; 8 months after policy 275 callers/ month [S.E. 40.64, p = .001]). CONCLUSIONS: There has been a sustained increase in both overall calls and new callers to the quitline after the introduction of the health warning labels. This increase is not attributable to other promotion campaigns or seasonality effects. The quitline toll-free number on tobacco packaging is an effective policy for increasing quitline call volumes and new callers receiving treatment between January 2010 and December 2013 after adjusting for the January effect, other promotional campaigns, and tobacco pricing. Data were analyzed using Box-Jenkins autoregressive integrated moving average models. Funding: Supported by Medical University of Silesia, Katowice, Poland (grant No KNW-1-037/NI/5/0), Institute of Occupational Medicine and Environmental Health, Sosnowiec, Poland (grant No ZSCHITG-9) and by NIDA/NIH grant 1R01DA037446

POS2-90
CHANGES IN NICOTINE CONCENTRATION AND CARBONYL COMPOUND YIELDS GENERATED FROM THE E-CIGARETTE SOLUTIONS SUBJECTED TO ACCELERATED AGEING
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Accelerated ageing is an artificial procedure for establishing the lifespan or shelf life of a product in an expedited manner. Ageing of e-cigarettes refill solutions may lead to the changes in the nicotine concentration as well as generation of the new compounds from the solvents, additives and flavorings. The study aimed at investigating the changes in nicotine concentration in e-cigarette refill solutions (e-liquids) and generation rates of carbonyl compounds in the aerosol from e-liquids subjected to the accelerated ageing process. Three commercial liquids: (L1 to L3) with the nicotine concentration varied from 1.1% to 1.6 % and different flavorings (cherry, coffee macchiato, honey) have been chosen for the study. The accelerated ageing was conducted according to the Guidance for Industry Q1A (R2) Stability Testing. The samples were stored for 180 days in the incubator at the temperature of 40±2°C and relative humidity of 75±5% RH and were protected from the exposure to light. Carbonyl compounds in aerosol and nicotine in liquid were quantified at the beginning of experiment and after 45, 90, 135 and 180 days of storage. We observed a statistically significant decrease in nicotine concentration in the e-liquid products after 180 days by 49.7% (L1), 73.0% (L2) and 68.6% (L3). In the samples kept in the room temperature (22±2°C) only a slight decrease in the nicotine concentration by 3.2% (L1), 6.5% (L2) and 6.8% (L3) has been observed. Acetaldehyde yields increased in aerosol generated from aged products by 3.7, 2.3 and 4.2 times respectively. Also yields of butanol increased by 2.4, 1.9 and 1.7 times respectively and benzaldehyde yields increased by 2.1 but only in one product (L1). There were no statistically significant differences in the aerosol yields for other examined carbonyl compounds. The preliminary research indicate that the chemical composition of the e-liquids stored in the high temperatures and the chemical composition of the aerosol generated from those products may change over several months. The manufacturers and distributors of e-liquids should inform the users about the expiration date and storage conditions of the products.

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POS2-91
THE INFLUENCE OF THE HEATING SYSTEM RESISTANCE ON THE NICOTINE YIELDS RELEASED FROM ELECTRONIC CIGARETTES
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E-cigarettes (EC) are products intended for pulmonary nicotine delivery. Nicotine from ECs is delivered to lungs with inhalable aerosol generated by vaporized solution (e-liquid). EC products differ in design and characteristics, including: variable battery voltage and resistance of the heating element. Differences in EC construction may result in the variable amounts of nicotine released from the device. The aim of this study was to evaluate the effect of the heating element resistance on the amount of nicotine released from ECs. EC aerosol was generated from the reference e-liquid using a smoking machine (Technical University of Lodz, Poland) using a 2nd generation EC. Aerosol was generated with 15 puffs in one series with following puffing conditions: puff volume 65ml, puff duration 2.8 sec, and intervals between puffs 9 sec. Samples were generated in 5 replicates for 0.5 Ohm and 1 Ohm heater resistance. Aerosol was adsorbed on the Cambridge filter and extracted into methanol, and then analyzed using gas chromatography. Differences in the nicotine yields between the two heaters were calculated using the t-test. The nicotine yields released from 0.5 Ohm and 1 Ohm heaters 191±73 and 104±11 ng/puff respectively (p<0.05). Reducing the resistance by half (from 1 to 0.5 Ohms) resulted in the increase of nicotine amounts released to aerosol by 83%. Lower heater resistance resulted in a larger variation in nicotine yields released per puff across replicates. The study showed that changing resistance of the heating element while sustaining the same voltage: leads to the release of various amounts of nicotine to EC aerosol. Changes in the resistance of the heating element in ECs significantly affects the amount of nicotine released to aerosol with a single puff. Heating elements with higher resistance provide greater uniformity in nicotine doses released per puffs.

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POS2-92
TOXICOLOGICAL EFFECTS OF FLAVORED ELECTRONIC NICOTINE DELIVERY SYSTEMS ON BRONCHIAL EPITHELIAL CELLS
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SIGNIFICANCE: Electronic nicotine delivery systems (ENDS) vaporize a nicotine solution in humectants into an inhalable aerosol. In addition to nicotine, flavorings are often added to these solutions. Although the majority of flavorings used in ENDS are generally recognized as safe (GRAS) when used in food, little is known...
about their health effects when inhaled. This study examined acute effects of aero- 
sol generated from flavored ENDS on a human bronchial epithelial cell line (H292). 
METHODS: We exposed H292 cells to aerosol generated from different flavored 
products among users of these products, including those who quite or continue to 
smoke conventional cigarettes (dual users), as well as those who never smoked 
tobacco cigarettes.

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**POS2-94**

RESPONSE DIFFERENCES IN THE PRESENCE OF CIGARETTE- 
RELATED STIMULI AMONG SMOKERS & EX-SMOKERS.

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Understanding behavioral and attentional mechanisms in the cigarette 
abusing population is a critical step towards a better intervention and prevention of the 
long identified public health issue. Studying differences in attentional response to 
substance abuse stimuli can further enhance our understanding of attentional 
mechanisms that can exacerbate the course of addiction. For instance, cue re- 
activity; reactions to substance use stimuli are associated with craving and sub- 
stance seeking behavior. Behavioral Data were analyzed from a larger attentional 
EEG study examining the physiological underpinnings of cue reactivity. A total of 31 
participants (16 smokers, 8 ex-smokers and 7 non-smokers) matched in age, 
education and gender completed a modified Flanker Visual Attention Task, which 
measured their ability of attending to and ignoring smoking and neutral stimuli 
on a computer screen. From the difference in performance (using correct overall 
reaction time) on incongruent and congruent trials we calculated the stroop effect 
which evaluates conflict resolution. A repeated-measures ANOVA showed that the 
amount of stroop interference in smokers was significantly greater in smoking im- 
age than in neutral images; however, ex-smokers displayed a similar but substanc- 
tially reduced stroop effect while controls showed no difference between the two 
stimuli. This analysis suggests that smokers are more affected by smoking images 
than neutral images whereas ex-smokers are also affected by smoking images but 
not to the extent of smokers. The effect found in ex-smokers could be explained by 
the time frame of abstinence: at least one year of total abstinence improves the 
attentional deficits in ex-smokers that seems prevalent in current smokers in the 
presence of smoking-related stimuli.

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**POS2-95**

ANIMAL MODELS TO ASSESS THE ABUSE LIABILITY OF 
electronic cigarettes: effects of electronic 
cigarette refill liquid on intracranial self- 
stimulation

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The Food and Drug Administration (FDA) has announced its intention to regulate 
electronic cigarettes (ECs), which have undergone a dramatic increase in popular- 
ity despite their unknown health consequences. Development of preclinical mod- 
els for evaluating the relative abuse liability of ECs is therefore urgently needed 
for informing FDA policy regarding these products and for anticipating their impact 
on public health. Animal models of tobacco addiction typically involve exposure to 
nicotine alone or nicotine combined with isolated tobacco constituents. The goal of this study was to develop a model using EC refill liquid (e-liquid) containing 
nicotine and other behaviorally relevant constituents (e.g., menthol) to more closely model EC use in humans. Specifically, we compared the addiction-related 
effects of nicotine alone and nicotine dose-equivalent concentrations of e-liquid on 
intracranial self-stimulation (ICSS) in rats. E-liquid for Aroma E-Juice, a product 
claimed to more closely simulate traditional tobacco cigarettes than typical ECs 
due to its relatively high levels of minor alkaloids, produced reinforcement-enhanc- 
ing (ICSS threshold-decreasing) effects similar to those of nicotine alone at low to 
moderate nicotine doses. In contrast, the ability of high nicotine doses to elevate 
ICSS thresholds, a putative measure of aversion, was attenuated in the e-liquid 
condition. The reinforcement-enhancing effects of both nicotine alone and e-liquid were partially attenuated by the nicotine acetylcholine receptor antagonist me- 
camylamine. As observed for Aroma E-Juice, e-liquid for two other products (Janty 
and Fruit Stripe) produced similar ICSS threshold-lowering effects but reduced 
ICSS threshold-elevating effects compared to nicotine alone. These findings indi- 
cate that nicotine’s aversive effects may be attenuated when delivered in e-liquid, 
an effect that could contribute to the abuse liability of ECs. These models may be 
useful for comparing the relative abuse liability of ECs and for modeling FDA-man- 
dated changes in EC product standards.
POS2-96
NEW GENERATION OF ENDS DELIVER HIGHER NICOTINE
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SIGNIFICANCE: Electronic nicotine delivering systems (ENDS) including disposable and rechargeable e-cigarettes, tanks systems (eGO), personal vaporizers, e-pipes and e-cigars, are emerging products in the US. These products are commonly perceived as safer alternatives to traditional smoking. As such technology is fairly novel and there are few regulations on such devices, the nicotine concentrations and delivery from ENDS may be variable and not consistent. The aim of this study is to determine the nicotine yields in aerosol released by various types and brands of ENDS. METHODS: We measured the nicotine yields in aerosol released from various types of ENDS purchased from retail and online stores. We also measured consistency of nicotine delivery from Blu disposable e-cigarettes purchased from different US regions. Aerosol from ENDS was generated using a smoking machine with a puffing protocol as follows 55m puff volume, 3sec duration, 30sec intervals. Nicotine from aerosol was trapped in a series of gas wash bottles and analyzed by gas chromatography (GC-NPD). The detected yields were compared across all the ENDS products. RESULTS: ENDS types differed significantly in the amount of delivered nicotine. Disposable e-cigarettes had the lowest nicotine delivery (on average 1.7±0.6 mg) while vaporizer style ENDS delivered the highest yields (20.3±2.4 mg). Nicotine yields released after 300 puffs from the Blu disposable e-cigarettes varied from 0.7±0.2mg to 4.3±0.5mg depending on the region and retail source. CONCLUSIONS: Brands and types of ENDS vary significantly in the delivered nicotine yields. Nicotine yields in aerosol released by the same products may also be inconsistent if the product is purchased from different sources. These results indicate poor quality control and inconsistency in the nicotine yield released from ENDS.

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POS2-97
CHARACTERISTICS AND DESIGN FEATURES OF POPULAR E-CIGARETTE BRANDS AVAILABLE ONLINE
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The large number and rapid evolution of electronic cigarette (ECIG) products necessitates that efforts to characterize their performance as a category of nicotine delivery devices focus on a reduced set of products. We developed a prioritization protocol that identifies the most popular brands available for online sale at a moment in time, and implemented this protocol to select and study the top 20 most popular products. Popular products were identified using 2 tools: web-based consumers' opinion ranking lists (RL) and social media analysis (SM). RLs were obtained through a Google search using the keywords "electronic cigarette brands". The frequency of occurrence of brands was used to generate an RL score. Sm score was generated by using ten basic variables from various social media sites. Brands that obtained the highest RL and SM scores, and whose RL score correlated significantly with their SM score were designated as popular. Twenty-seven products representing 20 popular brands were acquired, reverse engineered and analyzed for their design features and liquid characteristics. Atomizer geometry, materials of construction, puff draw resistance, activation type, battery characteristics, and other features were assessed. Liquid flavor, pH, nicotine concentration, free base nicotine, and propylene glycol/vegetable glycerin ratios (PG/VG) were determined. Seventy percent of the products had a "tobacco" flavor. The mean±SD pH was 8.51 ± 0.77, total nicotine concentration was 12.16 mg/ml (free base: 9.35 ± 4.84 mg/ml), and PG/VG ratio ranged considerably. We found statistically significant differences between measured and labeled nicotine concentrations and coel resistances. This work demonstrates a protocol to identify and prioritize for study the available products at a point in time. It provides an overview of design features and liquid characteristics of the most popular products currently available. The variability in terms of design features and liquid characteristics, and the discrepancy between advertised and measured nicotine levels highlights the volatility and variable manufacturing standards of this rapidly evolving, unregulated product category.

POS2-98
ASSESSING THE EFFICACY OF ANTI-NICOTINE MONOCLONAL ANTIBODIES THROUGH ESTIMATION OF SERUM ANTIBODY SATURATION IN VIVO
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Nicotine vaccines and anti-nicotine monoclonal antibodies are being studied as potential therapies for nicotine addiction. The optimal antibody affinity needed to achieve maximal efficacy is not clear. Antibody affinity for nicotine is typically characterized in vitro and may not accurately reflect the in vivo environment or the non-equilibrium conditions present shortly after a nicotine dose. A highly effective antibody should show high saturation of available binding sites by nicotine in vivo under clinically relevant conditions. The aim of this study was to estimate serum anti-nicotine antibody saturation in vivo in mice shortly after nicotine dosing. Animals were pretreated with 20 mg/kg of the monoclonal antibody Nic311 (Kd = 60 nM for nicotine in vitro in serum at 37 degrees C). Twenty four hours later mice received 0.015-0.12 mg/kg nicotine i.v. and nicotine concentrations were measured 1 min after nicotine dosing. Mean serum nicotine concentrations in controls ranged from 10 to 90 ng/mL. At all nicotine doses, mice that received Nic311 had significantly higher serum nicotine concentrations and lower brain nicotine concentrations than controls. The reduction in brain nicotine concentrations was greatest at the 0.015 mg/kg nicotine dose (66%) and diminished to 40% at the highest nicotine dose. Bound nicotine in serum was estimated as the molar nicotine concentration in serum in the Nic311 treated group minus that of the control group. Antibody saturation was estimated as bound nicotine divided by the measured serum antibody binding site concentration. Antibody saturation with nicotine increased from 20% after 0.015 mg/kg nicotine to 75% after 0.12 mg/kg nicotine. Therefore, antibody saturation at clinically relevant serum nicotine concentrations was incomplete. These data suggest that a higher affinity antibody that could result in higher saturation should be more effective than Nic311. Estimating antibody saturation in vivo may prove useful for anticipating the adequacy of antibody affinity as a predictor of the ability of vaccines or monoclonal antibodies to alter nicotine pharmacokinetics or behavioral effects.

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POS2-99
REAL-TIME ANALYSIS OF ORGANIC GAS-PHASE AND AEROSOL COMPONENTS OF E-CIGARETTES
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The increasing popularity of e-cigarettes has focused attention on the chemical composition and toxicity of the emissions generated by these devices. E-cigarette liquids consist of either propylene glycol (PG), vegetable glycerin (VG), or both (in variable ratios), with nicotine and chemical flavorants. During vaping, these
e-liquids are heated to high temperatures before being aerosolized, resulting in the formation of several toxic or carcinogenic volatile organic compounds (VOCs) to which the user is exposed. Data on the chemical yields of VOCs from e-cigarettes have been reported in previous studies in which the mainstream emissions were collected either on solid sorbents, DNPH (2,4-dinitrophenylhydrazine) samplers, glass fiber filters, or in impingers. There is a concern that these sampling methods may underestimate the true levels of the compounds of interest, and thus the real extent of exposure, largely because they only capture the material that is present in either the initial vapor phase or aerosol/particulate phases of the aerosolized puffs, but not both. To examine this issue, we used a high-sensitivity proton transfer reaction-mass spectrometer to focus on the real-time puff-resolved characterization of VOCs from e-cigarette emissions in the total (i.e., gas and aerosol/particulate phases) sample stream. We evaluated the efficacy of this approach by also measuring the same VOCs in the gas phase alone. The measured yields of all of the monitored VOCs were substantially higher (>10-1,000 times) in the total e-cigarette emissions than in the gas phase only. Measurements were made using commercially-available e-cigarettes with varying VG and PG ratios. Several harmful and potentially harmful constituents were identified, including the carcinogenic/nitrogenous VOCs, formaldehyde, acetaldehyde, propionaldehyde, and acrolein. Levels of acetaldehyde and acrolein were significantly higher in emissions from VG-dominant e-liquids. Carcinogenic VOCs typically found in combustible cigarettes (1,3-butadiene and benzene) were not detected at very low levels. Puff-by-puff VOC profiles appeared to vary cyclically for pure VG emissions but remained essentially constant for pure PG emissions.

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POS2-100
COMPARING THE ABUSE LIABILITY OF AN E-CIGARETTE REFILL LIQUID AND NICOTINE ALONE USING A RODENT SELF-ADMINISTRATION MODEL
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With the dramatic rise in electronic cigarette use and its potential impact on public health, the FDA has issued a proposed rule to regulate e-cigarettes. The abuse liability of e-cigarettes is one of the leading concerns of the FDA. Therefore, models to assess the relative abuse liability of electronic cigarettes are urgently needed. Methods to self-administer an e-cigarette refill liquid in rats. This e-liquid (Aroma E-juice WTA) is marketed as containing non-nicotinic alkaloids that may enhance its abuse liability and nicotine self-administration behavior across sessions. When examined across varying doses, BAC-ChAT-cre mice exhibited a leftward shifted in the dose response function, likely indicative of an increased response to the aversive properties of the drug. Together, these data suggest that BAC-ChAT-cre mice exhibit altered cholinergic signaling that results in increased sensitivity to the aversive properties of nicotine. As such, investigations with these mice should proceed with caution in consideration of this altered phenotype.

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**POS2-103**

ASSOCIATION BETWEEN SMOKING DURING PREGNANCY AND LOW BIRTH WEIGHT IN MURES COUNTY, ROMANIA

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BACKGROUND: Smoking increases the health risks from intrauterine period until the most advanced ages, and influences gestational age, birthweight and term of delivery among newborns. The relationship between maternal smoking and birthweight and preterm birth have been understudied in Romania. PURPOSE: To address this gap, we evaluated the relationship between maternal smoking and low birth weight and preterm birth in Mures County, Romania in 2014. Methods: We conducted a cross-sectional, in-person survey of 1,278 new mothers in Mures County’s obstetrical wards within 1-3 days after delivery. The survey included information about smoking behaviors before and during pregnancy, as well as sociodemographic characteristics and other health behaviors (e.g., nutrition) of the respondents. We also abstracted newborn’s data from medical records, including birth weight at delivery. Data were analyzed using an ANOVA test and Bonferroni’s multiple comparison test. RESULTS: We found statistically significant differences between the weight of the newborn babies from non-smoking women (2972±743.9g; n=165), smokers until pregnancy (3172±528.7g; n=216), and smokers during pregnancy (3137±673.5g; n=857). Risk for lower birthweight was also associated with self-identified Roma ethnicity, low education, and poverty. In a comprehensive review of the risk factors for low birth weight, the average birth weight for the newborn babies was 149 grams lower in children of smoking versus non-smoking mothers, which is consistent with the 165 grams found in our study. CONCLUSIONS: Like previous studies, maternal smoking during pregnancy was associated with risk for lower newborn birthweight. General practitioners, obstetricians/gynecologists, and other health care providers who serve the needs of pregnant women should be adequately trained to promote cessation among pregnant women.

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**POS2-104**

PROINFLAMMATORY POTENTIAL OF ELECTRONIC CIGARETTE VAPOUR COMPARED WITH CONVENTIONAL CIGARETTE SMOKE ON VASCULAR AND IMMUNE CELLS

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INTRODUCTION: Electronic cigarette vapor condensate (EVC) contains numerous compounds known to trigger immune dysfunction and inflammation in the arterial wall such as nicotine and reactive oxygen species. It is unknown whether EVC can elicit an inflammatory response in vascular and immune cells similar to cigarette smoke (CS). We used an in vitro model to examine the proinflammatory potential of EVC compared to CS. METHODS: The EVC was prepared by vaping a blu eCig (2.4% nicotine) through a chilled condenser. Approximately 150 puffs (1 puff = 133 mL draw over 4 sec following a 30 sec rest interval) were required to exceed one blu eCig. EVC was then dissolved in 50.0 mL of deionized water. Nicotine content of EVC and aqueous extract of cigarette smoke (CSE, Fisher Sci.) were determined via HPLC-MS to be 24.4 ppm and 10.0 ppm, respectively. EVC and CSE were diluted in serum free media (SFM) to normalize nicotine content to 1.0 ppm. Male rat aortic vascular smooth muscle cell (RASMC), and macrophage (RAW 264.7) cultures were treated with EVC, CSE, or SFM (control) for 48 hours, and secreted proinflammatory cytokines were detected in the culture media by an ELISA based cytokine array. RESULTS: Inflammatory cytokine array revealed a 9.7% (p = 0.058) and 51.5% (p = 0.033) increase in TNF alpha, and a 111.4% (p = 0.096) and 318.1% (p = 0.033) increase in IL-1beta secretion in EVC and CSE treated macrophages, respectively. Conversely, while secretion of IL-6 from EVC treated macrophages remained relatively unchanged, CSE treatment increased IL-6 by 221% (p = 0.0096) relative to control cells. A similar increase in MCP-1 secretion was noted in EVC (18.6%; p = 0.058) and CSE (20.2%; p = 0.042) treated RASMCs. CONCLUSION: The proinflammatory effect of EVC and CSE on RASMC and macrophages were compared at equivalent nicotine concentrations. Although less profound than CSE treatment, EVC also induces proinflammatory cytokines from macrophages (i.e., TNFalpha, IL-1beta) and RASMCs (i.e., MCP-1). These data suggest that vapor from electronic cigarette may initiate an inflammatory response in arterial and immune cells that could adversely impact vascular health.

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**POS2-105**

HIGH CONTENT SCREENING ASSESSMENT OF NICOTINE TOXICITY IN PRIMARY HUMAN BRONCHIAL EPITHELIAL CELLS

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Exposure to cigarette smoke (CS) increases the risk of developing respiratory diseases including chronic obstructive pulmonary disease and cancer. Cigarette smoke is a complex aerosol with over 7000 chemicals thus it is difficult to determine individual contributions to overall toxicity, as well as the molecular mechanisms by which smoke constituents exert their effects. Nicotine is a major CS constituent and the principal responsible for tobacco addiction. Several studies have investigated the genotoxic and cytotoxic effects of nicotine. However, the results are heavily dependent on the species and cellular model used, thus causing inconsistency. Furthermore, little in vitro data is available on primary human cells. The aim of the study was to investigate the biological effects of nicotine exposure in primary normal human bronchial epithelial cells. For this purpose, we initially performed a real-time cellular analysis to determine nicotine impact on cell viability. In addition, thirteen multi-parametric indicators of cellular toxicity were measured, via high content screening (HCS), over a range of nicotine concentrations and at different time points. Exposure to nicotine for 24h caused a dose-dependent decrease in lung epithelial cell viability at millimolar concentrations. At similar doses, HCS-based endpoints show a dose-dependent decrease in the levels of glutathione, suggesting the presence of oxidative stress. Moreover, we observed increase in apoptosis markers (caspase 3/7 activity and cytochrome c release) and necrosis, indicating the presence of cytotoxicity. We also observed changes in mitochondrial mass and membrane potential, suggesting the presence of mitochondrial injury. Finally, a moderate increase in the DNA damage marker phosphor-histone H2AX was observed, although the effect only occurred at cytotoxic concentrations, thus suggesting it may have been caused by the increased cell death. The present study provides mechanistic insight into the mode of action of nicotine on primary lung epithelial cells.

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**POS2-106**

FORMALDEHYDE FROM DIFFERENT FORMAT ELECTRONIC CIGARETTES COMPARED TO THE WHO AIR GUIDELINE

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Much has been published about the release of formaldehyde from electronic cigarettes, including the importance of measuring the carbonyls under consumer
relevant circumstances, rather than under artificially created dry puff conditions. What conditions are consumer relevant (e.g. power, PG/VG ratio of e-liquid used) depend on the vaping product and will be reflected in the instructions for use. We report formalddehyde measured in the aerosol from a variety of electronic cigarette formats. All electronic cigarette products were puffed under the same, representative, consumer use conditions: 80ml puff volume, 3 seconds puff duration and 30 seconds between the start of puffs.

Average microg formaldehyde/puff ± standard deviation was as follows:

0.18 ± 0.39 Rechargeable cigalike
0.39 ± 0.75 Closed modular with voltage choice, tested under worst case, high voltage conditions
0.93 ± 0.76 Refillable open tank system

For perspective, formalddehyde levels from the reference cigarette 3RF4 have been reported to be 20.0 microg/cigarette when measured under standard ISO conditions and 68.1 microg/cigarette when smoked under the Health Canada Intense regime. Own survey data (to be presented), corroborated by reports in the literature indicates that an average day represents a realistic estimate of worst case use for these products. Across the different formats, these results in exposures less than, or up to 326 microg formaldehyde/day due to vaping. Assuming a standard breathing volume of 20 m³/24 hours, average exposure concentrations to formaldehyde for realistic worst case users are thus at most 16 microg/m³. The World Health Organization’s long and short term indoor air guideline to prevent health effects from formaldehyde, including cancer, is 0.1 mg/m³, i.e. 100 microg/m³.

Inhalation exposure to formaldheyde from the three different formats of vaping product considered here, are thus all well below the levels considered to be safe by the WHO. In other words, even heavy use of the different formats of e-cigarettes still only results in daily formaldehyde exposures that are less than a fifth of the exposure from breathing indoor air that complies with WHO air quality guidelines.

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POS2-107

THE USE OF MOBILE TOPOGRAPHY DEVICES TO CAPTURE REAL-WORLD E-CIGARETTE VAPING BEHAVIORS

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The recent increase in popularity of e-cigarettes has stimulated a multitude of questions associated with the public health implications of their use. Studies have shown that users may be exposed to a variety of potentially toxic and carcinogenic compounds during vaping. Critical to measuring emissions and user exposures to these toxic/carcinogenic compounds is fully understanding vaping behavior. Puff topography parameters such as puff volume, puff duration, and inter-puff interval can have a significant impact on e-cigarette emissions and are thus important in assessing the toxicant delivery to users. However, little is known about use patterns and vaping topographies associated with these products. As part of a preliminary study on e-cigarette use, we recruited experienced vapers to determine the feasibility of using commercially available mobile topography recording devices to learn about real-world e-cigarette use behaviors. Subjects were asked to use their own e-cigarette with either the CReSS® mobile or SPA-M® portable topography device during all vaping sessions over the course of a week. Average real-world puff volumes recorded for a given day ranged from 10-148 mL across eight participants, with average puff durations ranging from 0.7-6 seconds. Up to 53 vaping sessions per day were recorded with the mobile topography devices. The average puff volume and duration varied by <50% for most participants across all home recorded sessions for the week, but the inter-puff interval variability was much larger, varying up to 200%. Subjects also participated in a laboratory session utilizing own-brand e-cigarettes with the mobile and a laboratory-based topography device in order to compare measurements and determine if real-world vaping behavior can be replicated in the laboratory. Various differences were noted, with the magnitude of these differences varying by participant and topography metric. Participants also provided feedback on the ease of use of the two mobile topography devices. These responses and laboratory validation of the devices underscored challenges with their use such as battery life and recording limitations.

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POS2-108

STANDARDIZED ELECTRONIC-CIGARETTE AEROSOL ALTERS GENOMIC STABILITY OF ORAL EPITHELIAL CELLS

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The $2.0 billion electronic cigarette (EC) industry has been successful in evading federal regulations for the past 10 years. In the US, over 400 companies are selling thousands of products from local vape shops to online stores with little or no regulation and substandard manufacturing practices. However, misleading, inconsistent and conflicting EC research results have polarized researchers, policy makers and the general public, leaving them with little scientific fact to evaluate the potential risks. Lack of scientifically robust standard testing paradigms, contaminated e-liquids and variability among EC devices are further hindering efforts to assess EC related health risks. Our Preliminary Data indicate that the EC standardized testing paradigms can be achieved by controlling 3 main variables: (1) e-liquid quality, (2) a third-generation EC device and (3) EC-specific smoking topography. We have successfully formulated high-quality, standardized e-liquid by strictly adhering to the National Institute of Standards and Technology (NIST) Reference Material guideline (NIST 34). Our custom-built EC testing device has adjustable voltage controls and a real-time total work display. EC-specific topography can be set by a digital airflow meter to conform to real-world values. Consequently, we can standardize generation of aerosol in a consistent and reproducible manner. Furthermore, we found that there are at least 17 previously unreported chemical byproducts in the standardized EC aerosol of which 6 may be hazardous. Aerodynamic particle analysis revealed that median EC aerosol size is 2.07 micrometers and 34% of particles are Fine Particulate Matters which are known to cause oxidative stress. Acute EC aerosol exposure was sufficient to elicit apoptosis from oral epithelia in a dose-dependent manner and repeated exposures led to global genomic instabilities indicated by DNA double strand breaks and compromised DNA-damage repair process. Given these findings, we conclude that chemical byproducts in EC aerosol lead to genomic instability in oral epithelia, and repeated genetic assaults by chronic EC exposure may increase mutagenic potential of oral epithelial cells.

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POS2-109

ENDOGENOUS PITUITARY ADENYLYL CYCLASE ACTIVATING POLYPEPTIDE (PACAP) MAY REGULATE THE MOTIVATIONAL EFFECTS OF NICOTINE

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Nicotine the active ingredient of tobacco is a powerful addicting substance and its chronic use leads to addiction, which is a major public health and socioeconomic issue. The pleasurable effect of low doses of nicotine is thought to play an important role in the initiation of nicotine addiction. On the other hand, the negative affective state that develops following nicotine withdrawal is known to promote relapse and leads to continued nicotine use. However, the underlying mechanisms of motivational effects of nicotine have not been fully characterized. Thus, this in vivo study was designed to determine the role of endogenous pituitary adenyl cyclase activating polypeptide (PACAP) in motivational and reinforcing effects of nicotine, known to play a critical role in the initiation and maintenance
of nicotine addiction. We used place conditioning and two-bottle choice (TBC) paradigms to assess the role of PACAP in motivational and reinforcing effects of nicotine, respectively. In the TBC paradigm, PACAP knockout and wild-type mice were housed individually while they had access to two water bottles for a week. Mice were then given a choice between water versus nicotine (20μg/mL) for the following week. The concentration of nicotine was increased by two-fold on each subsequent week. Our results revealed that wild-type mice failed to show any preference for the nicotine solution over the water. On the other hand, mice lacking PACPA consumed more nicotine compared to water and this response was higher than their wild-type controls, particularly at the two higher concentration of nicotine (40 and 80μg/mL). In the place conditioning paradigm, mice lacking PACAP and their wild-type littermates/controls were tested for basal place preference toward the conditioning chambers on day 1. Mice were then injected with either saline or nicotine (1 mg/kg) and confined to either vehicle-paired chamber (VPC) or drug-paired chamber (DPCh), respectively. In the afternoon, animals received the alternate treatment and were confined to the opposite chamber for 15 min. This twice daily conditioning lasted for 8 days. Mice were then tested for postconditioning place preference on day 10. On each test day, mice were placed in the neutral chamber of the CPP apparatus and allowed to explore all the three CPP chambers. The amount of time that mice spent in each chamber was recorded and used for data analysis. Our results showed that wild-type mice spent significantly longer amount of time in the nicotine-paired chamber (NPCh), showing that wild-type mice exhibited a significant aversion toward the nicotine-paired environment. On the other hand, this aversive effect of nicotine was absent in mice lacking PACAP. Together, these results suggest that endogenous PACAP may mediate the aversive effects of nicotine and PACAP and its receptors may be a novel target for the development of nicotine addiction and smoking cessation.

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POS2-110
INTEROCEPTIVE PREDICTIONS AND POSITIVE ALLIESTHESIA IN NICOTINE ADDICTION

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During nicotine abstinence, the increased motivational salience attributed to cigarettes and smoking cues undermines smoking cessation efforts and promotes relapse. This process, known as positive alliesthesia, may be thought of as an interoceptive prediction error reflecting deviations from ‘expected’ homeostatic drug levels. Given recent theoretical accounts of the insula’s role in the generation and testing of interoceptive predictions, we sought to characterize the relationship between changes in interoceptive insula activity and shifts in drug cue valuation during nicotine craving. On two separate days, one nicotine-sated and one nicotine-abstinent, daily cigarette smokers performed a task where they provided ratings of the expected pleasantness associated with smoking visually depicted cigarettes. On both days, smokers also underwent fMRI scanning while performing a task requiring visceral interoceptive attention as well as a resting fMRI functional connectivity scan. We calculated the difference in pleasantness ratings for cigarette cues between abstinent and sated days. We then examined the relationships between the change in hedonic ratings between sated and abstinent sessions and the change between sessions in interoception-evoked brain activity and resting-state functional connectivity. Smokers rated cigarette cues as significantly more pleasant during nicotine-abstinent sessions than during nicotine-sated sessions. This increase was significantly predicted by the change in interoception-evoked activity in the dorsal mid-insula between the sated and craving scans (r= -0.70, p<0.004). The increase in hedonic ratings for smoking cues was also correlated with the increase in resting-state functional connectivity between the dorsal mid-insula and the ventral anterior insula, dorsal striatum, and amygdala. These findings are consistent with a model whereby abstinence-induced alliesthesia for drug cues results from processing in the mid-insula of afferent withdrawal signals from the body, which amplifies the hedonic properties of drug cues through increased connectivity to brain regions involved in salience and reward.

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POS2-111
TOBACCO-SPECIFIC N-NITROSAMINES IN U.S. CIGARETTES: ‘PER MG NICOTINE’ YIELD VARIATIONS BY BRAND AND SMOKING MACHINE REGIMEN

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BACKGROUND: The U.S. Food and Drug Administration has the authority to regulate the levels of harmful and potentially harmful constituents in cigarette smoke. Such regulation requires standardized machine testing protocols for the measurement and reporting of cigarette smoke constituent yields. The traditionally used machine testing methods are widely recognized to be inadequate for the prediction of human exposures. Our goal is to investigate whether constituent ‘per mg nicotine’ emissions in cigarette smoke are better predictors of exposures in smokers and which of the standard smoking machine regimens deliver ‘per mg nicotine’ yields that are most closely related to these exposures. METHODS: We analyzed the carcinogenic tobacco-specific nitrosamines NNN and NNK in 114 cigarette samples representing various subbrands of 11 major U.S. cigarette brands. ‘Per cigarette’ and ‘per mg nicotine’ NNN and NNK yields were measured by using three standard smoking machine regimens varying in smoking intensity. Constituves were determined using a gas chromatography-mass spectrometry system. RESULTS: ‘Per cigarette’ yields of NNN and NNK measured by the least intense smoking machine regimen averaged 132±60 ng/cigarette and 110±72 ng/cigarette, respectively; these values for the most intense regimen averaged 266±69 ng/cigarette and 145±38 ng/cigarette. ‘Per mg nicotine’ yields followed the opposite trend, averagings 165±85 ng NNK/cigarette and 155±85 ng NNK/cigarette in the least intense and 139±241 ng NNK/cigarette and 71±29 ng NNK/cigarette in the most intense machine regimen. The variation of ‘per mg nicotine’ yields of NNN and NNK was higher under the least intense smoking conditions (~10-fold for both constituents) than under the most intense conditions (~4-fold for NNN and ~6-fold for NNK). CONCLUSIONS: There are significant differences in ‘per cigarette’ and ‘per mg nicotine’ yields across U.S. cigarette brands. Increased intensity of cigarette smoking on a smoking machine produces higher ‘per cigarette’ yields but lower ‘per nicotine’ yields of NNN and NNK. Studies are underway to understand how these measurements are related to exposures in smokers.

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POS2-112
SMOKING CARCINOGEN 4-(METHYLNITROSAMINO)-1-(3-PYRIDYL)-1-BUTANONE (NNK), A NICOTINE DERIVATIVE, STIMULATES LUNG CANCER STEM CELLS TO INDUCE LUNG CANCER

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It is well known that cigarette smoking contributes to about 80% of lung cancer. However, the detailed mechanism is far from clear. Increasing evidence has indicated that lung cancer stem cells (LCSCs), a small population of cancer cells, play a critical role in lung cancer development. Unfortunately, information on cigarette smoking carcinogens and LCSCs is very limited. The aim of this study was to explore whether and how cigarette smoking affect LCSCs. Among various cigarette smoking carcinogens, NNK, a nicotine-nitrosated derivative, is the major carcinogenic component. NNK is known to induce lung tumors in all kinds of animal models tested so far. We thus used NNK as the smoking carcinogen in this study. Non-small lung cancer cells NCI-H23 and NCI-H1299 were employed for the study. Stem cell specific culture medium was used to induce LCSCs in the presence and absence of NNK. AU mice were intraperitoneally injected with NNK to induce lung tumors. The properties of LCSCs were examined. We found that NNK increased the levels of CD133 and ALDH1A1, two known markers of LCSCs, after cells were treated with NNK 10 days. NNK could also promote tumor
Cigarette smoking is the leading cause of preventable cancer death. Continuing smoking after cancer diagnosis contributes to increased therapeutic resistance, toxicity and recurrence. The levels of carcinogens in mainstream (MS) smoke, the main smoke inhaled by active smokers, and sidestream (SS) smoke, the main component of secondhand smoke, are different. This suggests that MS and SS smoke may elicit different molecular mechanisms on human cells. Cancer stem cells (CSCs) are a small subset of cells notorious for their unique self-renewal and multi-potency capacities, which have been shown to drive tumor initiation, progression, metastasis, and therapeutic resistance. However, the effects of cigarette smoke on CSCs remain poorly studied. Currently no studies have reported the effects of SS smoke on CSCs. Here, we examined the individual effects of MS and SS smoke on the stemness of epithelial cells. Normal and cancer epithelial cell lines were exposed every other day for 2 weeks to smoke extracts and their self-renewal and pluripotency properties were evaluated using ALDEFLOUR assay, sphere formation, cell viability, and quantitative PCR. Exposure to MS and SS smoke extracts caused a significant increase in the number and self-renewal properties of head and neck cancer stem cells. A smaller but significant increase in sphere formation was observed in normal epithelial cells exposed to MS or SS smoke. Interestingly, the spheres formed in the presence of SS smoke extracts were morphologically different from those formed in the MS-exposed cells. Importantly, both MS and SS smoke extracts caused a significant increase in the expression of OCT4, the gatekeeper of stem cell pluripotency, and of WNT3A, a major activator of the canonical Wnt pathway with key roles in stem cell self-renewal and tumor progression. These data provide novel mechanisms by which active and passive smoking, distinctively, might contribute to tumor initiation, progression, and therapy resistance. Of major clinical importance, our data suggests for the first time that exposure to secondhand smoke might worsen the overall cancer prognosis of nonsmokers.
E-cadherin and higher levels of vimentin and displayed fewer cell-to-cell contacts, although they were not yet invasive. Network analysis revealed significant perturbations of biological processes related to cell stress, cell fate and inflammatory responses as early as week 1, with maximum impact of treatment seen at week 3 albeit the same underlying biology. In summary, our experiments indicate that long-term exposure of bronchial epithelial cells to 3RF TPM induces ongoing transcriptome alterations as well as phenotypic changes that may eventually lead to carcinogenesis. The data here may lead to a better mechanistic understanding of the stepwise transformation of normal airway epithelial cells to full malignancy, opening up the opportunity for this model to be employed in pre-clinical product assessment studies.

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POS2-117 CHEMICAL FINGERPRINTING OF TOBACCO AND RELATED PRODUCTS BY TD–GC–TOF MS

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The hazardous constituents of cigarette smoke have attracted considerable media attention, especially with increasing regulation around the world limiting or banning smoking in public places – and even in private cars if children are present. Furthermore, the recent surge in tobacco-replacement devices, such as e-cigarettes, is driving the development of fast and efficient quality control procedures. E-cigarette solutions may contain potentially harmful chemicals, including nitrosamines and polycyclic aromatic hydrocarbons (PAHs). The presence of such chemicals naturally gives rise to some concern, and confident chemical fingerprinting is required for both research and development and regulatory purposes. Although e-cigarettes emit less particulate matter than regular tobacco cigarettes (since no combustion takes place), they still produce a wide range of compounds at trace levels. Organic constituents of tobacco smoke have historically been analysed by gas chromatography coupled with quadrupole mass spectrometry (GC–MS). However, quadrupoles are mass filters, with a high percentage of ions being wasted, which limits sensitivity. Moreover, in selected ion monitoring (SIM) mode, only target compounds can be monitored, meaning that full characterisation of the sample is not possible in a single run and retrospective searching of data is limited. The use of time-of-flight mass spectrometry (TOF MS) overcomes this issue by providing highly sensitive detection whilst acquiring full-range mass spectra, to allow both target and unknown identification in a single, rapid analysis. This presentation explores the use of a multi-functional thermal desorption (TD)–GC–TOF MS system to capture and identify whole e-cigarette emissions using a single, highly-automated platform.

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POS2-118 PREDICTING TOBACCO-USE BEHAVIORS MEASURED DURING A LABORATORY CHOICE PROCEDURE: THE EXTENSION AND REPLICATION OF CHOICE BEHAVIOR UNDER CUED CONDITIONS (CBUCC)

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Laboratory-based smoking studies are widely used to evaluate the complex relationships between smoking behavior and drug-specific cues, craving, and mood. We recently developed a laboratory paradigm, Choice Behavior Under Cued Conditions (CBUCC; Gass & Tiffany, unpublished), that evaluates several smoking behaviors and their relationship to craving and mood in a multi-trial cue-reactivity task. Tobacco-use can be divided into behaviors that reflect consumption of tobacco and those that reflect seeking. Seeking can be further subdivided into automatic seeking (behaviors executed with little awareness or effortful processing) and nonautomatic seeking (those that require decision making and deliberative choices). In this task, smokers are exposed to either a lit cigarette or a glass of water behind a movable glass door - they then use real money to pay for the chance to access the cue. CBUCC captures (in close contiguity) consumption, automatic seeking, and nonautomatic seeking and can evaluate, on a trial-by-trial basis, how craving and mood relate to these different behaviors. Pilot work with CBUCC yielded robust cue-reactivity effects, including higher craving and money spent on smoking trials relative to water trials. Additionally, pilot work suggested that craving measured during smoking trials was significantly associated with nonautomatic seeking and tobacco consumption but not automatic seeking. In the current study, we replicated and extended these findings with a larger sample size of adult smokers (n=101) exposed to an abstinence manipulation. With this larger sample, CBUCC produced highly reliable estimates of craving and tobacco-use behavior (alphas between 0.88 and 0.98), strong cue-reactivity effects for craving, and differential effects of cue type on spending as a function of abstinence. We also found several significant correlations between craving and behavior (e.g., craving and money spent, r=0.53) in the non-abstinent group but notably fewer significant associations for the abstinent group. The implications of these findings for studies of relationships between craving and distinct components of drug-use behavior will be discussed.

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Our study demonstrates for the first time that chronic exposure to nicotine increases WNT3A, an activator of the Wnt/beta-catenin signaling pathway. No significant self-renewal and spheroid size. Chronic exposure to nicotine also caused a significant effect on cell viability measured by the MTT assay. Data was analyzed using a t-test. Exposure of oral cancer cells with Sch 23390 (SCH) or the 5HT2c agonist lorcaserin (LOR) significantly reduces nicotine self-administration (SA) caused by 0.03 mg/kg of SCH as well. This study showed that the 5HT2c agonist LOR and the D1 agonist SCH 23390 (SCH) or the 5HT2c agonist torcaserin (LOR) significantly reduces nicotine self-administration (SA) in rats. In this study, we examined the interactions of D1 receptor blockade with SCH and LOR and SA in rats. Nicotine dependent smokers (n = 100) completed a cue-reactivity procedure (6 smoking, 6 neutral trials), latency to smoke task, and Cigarette Purchase Task at two sessions separated by 24 hr. Craving, craving variability, and negative affect were positively correlated with the cue-reactivity and latency to smoke tasks. Half of participants were overnight abstinent at Session 2. Previous findings were replicated: we observed faster response times at high and low levels of craving report (similar trends were observed for inter-item variability), and positive correlations were observed between response time and inter-item variability. The significant relationships between response time and self-report craving persisted even when a general measure of response time unrelated to craving was controlled for in the analyses. Response time was not associated significantly with self-report craving. Response times were faster and inter-item variability lower when nonabstinent smokers observed neutral relative to smoking cues, but the opposite was true for abstinent smokers. Finally, response time predicted negative affect, latency to smoke, and smoking reinforcement above and beyond craving level and more consistently predicted outcomes relative to inter-item variability and self-report craving. These results validate craving response time as an implicit measure of craving processes and suggest that response time could aid researchers and clinicians in predicting smoking-related behaviors. Funding: This research was funded by the American Psychological Association (dissertation award), the Bugelski Fellowship (Department of Psychology at the University at Buffalo, The State University of New York), and the Mark Diamond Research Fund of the Graduate Association at the University at Buffalo, The State University of New York. Corresponding Author: Stephen Tiffany, University at Buffalo, The State University of New York, NY, USA, stiffany@buffalo.edu

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Nicotine activates the Wnt/beta-catenin pathway and increases the stemness of head and neck cancer cells. Tobacco smoking is the greatest contributing factor for lung & head and neck cancer worldwide. In an attempt to reduce tobacco smoking, nicotine replacement therapies (NRTs) have been heavily utilized. Nicotine based electronic cigarettes (ECIGs) have also been promoted as a safer alternative to traditional cigarettes while the effects of nicotine replacement therapies (NRTs) are generally attributed to nicotine on stem cells, human epithelial normal (NuLi) and cancer cells (SCC1) were exposed to 30 μM nicotine for 2 weeks. Stem cell number and self-renewal were evaluated using ALDEFLUOR and spheroid formation assays, respectively. The expression of stem cell and differentiation markers was quantified using qPCR. Cell viability was determined by the MTT [3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide] assay. Data was analyzed using a t-test. Exposure of oral cancer cells to nicotine for 2 weeks caused a significant increase in stem cell self-renewal and spheroid size. Chronic exposure to nicotine also caused a significant increase in the expression of OCT4, a master regulator of stemness, and WNT3A, an activator of the Wnt/beta-catenin signaling pathway. No significant changes in cancer cell viability were observed. No significant changes in stemness or viability were observed in normal epithelial cells chronically exposed to nicotine. Our study demonstrates for the first time that chronic exposure to nicotine increases the stemness of oral cancer cells. Moreover, our data suggests that chronic nicotine exposure leads to activation of the Wnt/beta-catenin pathway, which has been shown to play a major role in head and neck cancer progression. These findings reveal novel mechanisms by which nicotine exposure can promote tumor progression and therapy resistance and emphasize the need to further investigate the health consequences of NRTs. Our data reflect only the effect of 2 weeks of exposure to nicotine, thus the true impacts of nicotine on human health outcomes could be much more drastic. Funding: This work was supported by the Oklahoma Tobacco Research Center. Dr. Queimado holds a Presbyterian Health Foundation Endowed Chair in Otolaryngology.

Acute interacting serotonergic-dopaminergic treatments for decreasing nicotine self-administration in rat. The brain is an organ of communication. A variety of brain systems interact in the basis of tobacco addiction. In addition to nicotinic acetylcholine receptors, the primary site of action of nicotine, dopamine and serotonin also play important parts in the neural basis of tobacco addiction. It is important to discover neural interactions to improve our basic understanding of the neural interactions underlying nicotine effects and give these interactions to provide enhanced therapeutics to treat tobacco addiction. We have found that systemic administration of the D1 agonist SCH 23390 (SCH) or the 5HT2c agonist torcaserin (LOR) significantly reduce nicotine self-administration (SA) in rats. In this study, we examined the interactions of D1 receptor blockade with SCH and 5HT2c receptor stimulation with LOR in rats nicotine SA. Young adult female SD rats were tested for the effect of acute doses (0.5 mg/kg) of nicotine on nicotine SA (0.3 mg/kg/dose) in 1-hour sessions. The LOR (0.2 and 0.6 mg/kg) and SCH doses (0.01 and 0.03 mg/kg), all combinations and saline were given in a counterbalanced order twice (N=11). LOR alone at the higher but not the lower dose significantly (p<0.005) reduced nicotine SA. SCH at both doses significantly (p<0.0005) reduced nicotine SA. These treatments significantly augmented each other’s effects with the addition of 0.5 mg/kg of LOR to 0.01 mg/kg of SCH significantly (p<0.01) enhancing the decrease in nicotine SA caused by 0.01 mg/kg of SCH alone. The addition of 0.6 mg/kg of LOR to the higher SCH dose also significantly (p<0.05) enhanced the reduction of nicotine SA caused by 0.03 mg/kg of SCH as well. This study showed that the 5HT2c agonist LOR and the D1 agonist SCH significantly reduce nicotine SA and mutually augment each other’s effects. This interaction should be tested for efficacy in smoking cessation treatment in humans.

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Nicotine activates the Wnt/beta-catenin pathway and increases the stemness of head and neck cancer cells.

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While the effects of nicotine replacement therapies (NRTs) are generally attributed to nicotine pharmacology and expectancy effects associated with NRT administration have done so using participants that have no intentions of quitting smoking, and it is unclear to what extent the findings of such studies can be extended to smokers who are motivated to quit. In this study, we examined the impact of nicotine pharmacology and expectancy on cigarette craving and self-administration in 47 dependent smokers who were either motivated (n=21)
or unmotivated (n=26) to quit smoking using a modified balanced placebo design. Participants self-administered a nicotine-containing or nicotine-free inhaler across two sessions but were told that they received a nicotine-containing inhaler during one session and a nicotine-free inhaler during the other session. Measures of subjective craving were collected pre- and post-inhaler administration. Subsequently, participants completed a progressive ratio task during which they were given the opportunity to self-administer puffs of their preferred brand of cigarettes. In those not motivated to quit, nicotine pharmacology and expectancy each independently reduced intentions to smoke, while in quitting-motivated smokers, nicotine-containing inhaler discouraged smoking and encouraged quitting intentions. In those not motivated to quit, nicotine-containing inhaler reduced intentions to smoke, while in quitting-motivated smokers, nicotine-containing inhaler discouraged smoking and encouraged quitting intentions. In those not motivated to quit, nicotine-containing inhaler reduced intentions to smoke, while in quitting-motivated smokers, nicotine-containing inhaler discouraged smoking and encouraged quitting intentions. In those not motivated to quit, nicotine-containing inhaler reduced intentions to smoke, while in quitting-motivated smokers, nicotine-containing inhaler discouraged smoking and encouraged quitting intentions.

**Funding:** NSERC

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**POS2-123**

**DEVELOPMENT AND FINDINGS FROM AN INSTRUMENT FOR RETAIL POINT OF SALE ASSESSMENT IN YOUTH-FREQUENTED LOCATIONS IN THAILAND**

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**BACKGROUND:** Recent research of the point of sale (POS) display ban in Thailand found violations in compliance over a three year period in Thailand. The objective of this study was to pilot test a surveillance instrument for assessment of retail shop practices and compliance with the POS ban at locations that youth frequent. **METHOD:** This pilot study assessed point of sale policy domains commonly assessed through a US assessment instrument called STARS, the standardized tobacco assessment for retail settings. We sampled 55 locations in Bangkok and Pitsanulok in northern Thailand. These included areas like youth entertainment areas (N=29) and small retail outlets in busy areas and around schools (N=26). The surveillance instrument was developed and reviewed by three tobacco control researchers who had done retail assessments in Thailand previously and who understood STARS assessment domains. **RESULTS:** Shops were small locally-owned retail shops (19), specialty entertainment places (18), or chain convenience/market shops (18). Most shops displayed the required sign for cigarette availability, “Cigarettes sold here”, and only one had any exterior shop ad, with 12 (22%) having some kind of interior POS display visible. Only 8 areas were settings with a high density of retail shops (2 or more shops within 400 meters). Illegal sales were detected in 2 entertainment settings (hookah and flavored cigarettes). The level of compliance with the POS ban was based more on types of retail outlet, with small retail shops more likely to violate the ban and make tobacco products easily available to customers. Similarly, outlets that sold alcohol, like pubs, were also more likely to display and promote tobacco products. **CONCLUSION:** The simple assessment instrument developed for this study was useful for unobtrusive surveillance with Thailand’s point of sale ban. The pilot brought attention to challenges regarding tobacco sales licensing and night time enforcement around entertainment areas and should be further tested for use in monitoring compliance in all areas of Thailand. Because a new Tobacco Product Control Act may be enacted in 2016, its provisions such as raising the age of purchase to 20 and prohibition of single cigarette sales, as well as enforcement administration by provincial health committees should be incorporated into the further development of this POS assessment tool for possible use throughout Thailand.

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**POS2-124**

**FACTORS RELATED TO MALE SMOKING BY MYANMAR MIGRANT FACTORY WORKERS IN THAILAND**

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**BACKGROUND:** Migrant workers from Myanmar are a significant workforce in Thailand. Samut Sakhon province is the location of thousands of factories that employ Myanmar migrants to process seafood and for production of other goods. Our aim was to characterize migrants’ smoking status and the factors that are important to smoking-related behaviors of this worker population. **METHOD:** A questionnaire was used to evaluate socio-demographic, personal and psychosocial factors related to smoking status. After gaining IRB (University Ethics Committee) approval, we obtained permission from a large factory in Samut Sakhon province to conduct person to person interviews using a structured questionnaire of variables used in previous investigations of migrant workers in Samut Sakhon province including variables on smoking status, knowledge and behavior. Sample size was calculated using experience from a previous study of migrant workers in this province. After permission from the factory and with consent from each worker interviewed, a convenience sample of 300 migrant workers at one factory was collected. **RESULTS:** Most workers were males, with 90% of all workers current smokers. Most workers were married, but many did not have their families with them in Thailand since they came as low-wage day workers and were in Thailand for less than 5 years. Mean age of smoking initiation was 18.59 years. Male gender, limited education, poor knowledge and attitude of smoking harms, smoking by friends, and having 6 or more of their 10 closest friends smoking were significant predictors of smoking (p-value < 0.05). While these variables were significant, the psychosocial variables of workplace and community circumstances (separation from family and isolation from the larger Thai community) of this migrant population resulted in a very high smoking rate among the male workers interviewed (94%). There was limited encouragement to quit smoking in the migrant work setting or community which would likely require an intervention from within their own community. **CONCLUSION:** Our results and analysis shows high conformity to peer and workplace conditions which enabled and reinforced smoking behavior. Policies and actions to inform migrants of the dangers of tobacco use and the establishment of smoke-free environments in the workplace and community when working in Thailand should be developed within the migrant community. Interventions have been developed for Thai factory workers and similar projects through leaders of the migrant community should be developed and implemented to promote better health for migrant workers and to forward workplace safety and productivity.

**Funding:** No funding

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**POS2-125**

**IMPROVING NICOTINE PATCH ADHERENCE AMONG LATINO HIV-POSITIVE SMOKERS: A PILOT RANDOMIZED CONTROLLED TRIAL**

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Poor adherence to the nicotine patch significantly decreases the chances of quitting smoking among people living with HIV/AIDS. Prior research indicates that simply providing accurate information about the cost, side effects, efficacy, and safety of nicotine patches is not sufficient to improve adherence. This randomized controlled trial builds on our formative work to develop and pilot test a brief smoking cessation counseling intervention designed to increase motivation and skills to consistently use the nicotine patch among HIV-positive Latino smokers, an underserved population in smoking cessation research. Participants were 40 Latino smokers who were age 18 or older, self-identified as HIV-positive, and were current daily smokers (>5 cigarettes per day for the past month). They were randomized to a one-on-one standard brief smoking cessation counseling session based on the “5 A’s”, or a similar counseling session that included a module designed to increase motivation and skills to consistently use the nicotine patch. All participants were given an 8-week supply of patches. Participants could receive counseling and materials in either Spanish or English. Primary treatment outcomes were continuous abstinence (i.e., no smoking from target quit date through 3-month fol-
low-up), biochemically-verified 7-day point prevalence abstinence at the 3-month follow-up, and whether all patches were used. Preliminary analyses suggest that there are no significant group differences at baseline on age (mean=42 years), gender (94% male), smoking within 30 minutes of waking (63%), or number of cigarettes per day (mean=13 cigarettes). Thirty-three participants have completed the study thus far. Compared to those in the Standard condition, participants in the Adherence condition have higher rates of continuous abstinence (12% vs. 31%, respectively), 7-day point prevalence abstinence (18% vs. 31%), and using all of the patches (18% vs. 31%). Preliminary results from this pilot RCT are promising, suggesting that adherence to the nicotine patch among Latino HIV-positive smokers can be increased through an adherence-focused brief smoking cessation counseling intervention.

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**POS3-1**

**INDICATORS OF DEPENDENCE FOR DIFFERENT TYPES OF TOBACCO PRODUCT USERS: DESCRIPTIVE FINDINGS FROM PATH**

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**BACKGROUND:** The Population Assessment of Tobacco and Health (PATH) Study conducted comprehensive examination of multiple domains of dependence across multiple tobacco products in a nationally representative sample from the 32,320 Adult Wave 1 (Baseline) Interviews (all participants ages 18 years and older). **OBJECTIVE:** The primary aim of the current study was to examine the psychometric properties of tobacco dependence (TD) indicators with validity for cigarettes, across a range of tobacco products. **RESULTS:** Using methods based in item response theory, we confirmed a single primary latent construct underlying responses to TD indicators for cigarettes, e-cigarettes, cigars, hookah, and smokeless tobacco products (CFI=0.96-0.98; TLI=0.95-0.98; RMSEA=0.05-0.09). We established seven mutually exclusive past year tobacco-user groups: cigarette only users (n=6880), e-cigarette only users (n=435), cigar only (traditional, cigarillo, or filtered) users (n=586), hookah only users (n=483), and smokeless tobacco only users (n=915), cigarette plus e-cigarette users (n=706) and users of multiple tobacco products (n=2504). Differential Item Functioning (DIF) analyses supported an ability to capture a broad range of TD similarly for different tobacco product users with 17 of the 24 examined items. With cigarette users as a standardized reference for comparison (mean=0.0, sd=1.0), other product user groups differed significantly in levels of TD with hookah only users lowest (mean=-2.11) and cigarette plus e-cigarette product users the highest (mean=0.35). Regression models supported concurrent validity with significant associations of product use frequency among cigarette-only users (F(2,9)=1496.28, p<0.001), e-cigarette only users (F(2,9)=20.10, p<0.001), cigar users (F(2,9)=109.14, p<0.001), hookah only users (F(2,9)=42.71, p<0.001), and smokeless tobacco users (F(2,9)=77.50, p<0.001). Further, sociodemographic factors are examined to assess correlates of TD. **CONCLUSION:** The PATH Study Adult Wave 1 (Baseline) Questionnaire provided reliable and valid measurement of a broad range of TD across several tobacco products that can be used to effectively characterize the impact of patterns of use.

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**POS3-2**

**YOUTH ACCESS TO TOBACCO PRODUCTS IN THE UNITED STATES: FINDINGS FROM WAVE 1 (2013-2014) OF THE POPULATION ASSESSMENT OF TOBACCO AND HEALTH (PATH) STUDY**

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**BACKGROUND:** Increasing diversity of tobacco products and differing means of access by youth may be partly responsible for the consistent prevalence of tobacco use among youth. More information is needed regarding where and how youth access tobacco products other than traditional cigarettes. **DESIGN/METHODS:** The Population Assessment of Tobacco and Health (PATH) Study is a longitudinal, nationally representative cohort study of tobacco use and associated behaviors among adolescents and adults in the United States. Current tobacco users (past 30 days) aged 12-17 from Wave 1 (September 2013-December 2014) of the PATH Study were asked about usual sources of access for all forms of tobacco. Subjects who reported purchasing tobacco products were asked where these were purchased. All were asked if they had ever been refused sale of tobacco due to their age. Due to small numbers of youth ages 12-14 who report accessing tobacco products, analyses focus on 15-17 year olds (n=6653) for the 5 most prevalent tobacco forms. **RESULTS:** Social sources (“someone offered to me” or “asked someone other than me to give me”) were the predominant “usual” access for each tobacco product. Some 56.7% of e-cigarette users and 56.9% of hookah (waterpipe) users usually obtain these products from friends/peers. “Bought by self” was the usual source for 13.8% of cigarette users; 10.5% of e-cigarette users; 21.0% of cigarillo users; 12.0% of hookah users; and 23.2% of smokeless users. Usual source of retail tobacco was convenience stores or gas stations for all products except hookah, which was more often accessed at smoke shops. Among youth who attempted to purchase a tobacco product, 24.3% were refused sale of cigarettes; 14.3% of e-cigarettes; 23.9% of cigarillos, 10.1% of hookah, and 13.8% of smokeless. **CONCLUSIONS:** A minority of underage tobacco users are obtaining their tobacco products by self-purchase. Of those who purchased tobacco, most are purchasing at convenience stores or gas stations and the majority of youth report not being refused sale due to age.

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**POS3-3**

**YOUTH TOBACCO USE IN 2013/14: FINDINGS FROM THE POPULATION ASSESSMENT OF TOBACCO AND HEALTH (PATH) STUDY, WAVE 1**

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**BACKGROUND:** Youth cigarette smoking in the United States (U.S.) has declined during the past decade, but use of non-cigarette tobacco products, particularly e-cigarettes and hookah, has risen. **METHODS:** We present prevalence and correlates of use for 12 types of tobacco products among youth from Wave 1 of the Population Assessment of Tobacco and Health (PATH) Study, a large nationally representative longitudinal study of tobacco use and health in the U.S. The PATH Study includes 13,651 youth aged 12-17 years. Participants were asked a series of questions about their use of cigarettes, e-cigarettes, traditional cigars, cigarillos, filtered cigars, pipe tobacco, hookah, snus pouches, other smokeless tobacco, dissolvable tobacco, and kretek/tobacco snuff. Prevalence and demographic correlates of use for each type of product was determined, and prevalence of multiple product use was explored. Findings were compared to other national surveys. **RESULTS:** Overall, 22.3% of youth had ever used a tobacco product, 9.0% were past 30-day users, and 1.6% were daily users. The most common forms of tobacco products used were cigarettes, e-cigarettes, cigarillos, and hookah. Prevalence was higher among older youth, sexual minorities and racial/ethnic minorities. Among past 30-day tobacco users, 44.8% used multiple products, and among those who used multiple products, most used cigarettes (70%) and about half used e-cigarettes or cigarillos (48.6% and 48.2%, respectively). **CONCLUSIONS:** According to the PATH Study, millions of American youth aged 12-17 years have ever used a tobacco product, and prevalence was higher among older youth and disparate groups. Among past 30-day tobacco users, multiple product use was common. These data will serve as a baseline to characterize trends in experimentation and initiation of tobacco products among U.S. adolescents and the factors that influence uptake of these products.

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POS3-4
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BACKGROUND
To assess the impact of e-cigarette use on public health and in-form regulatory decisions, it is critical to understand who uses e-cigarettes, how e-cigarettes are used, and what types of products are prevalent. METHODS
This analysis used Wave 1 data from the Population Assessment of Tobacco and Health (PATH) Study, a nationally-representative longitudinal cohort of tobacco use and health in the U.S. The PATH Study includes 32,320 adults aged 18+ years. Using data for current (every day or some day) adult e-cigarette users (unweighted n=3,642), we estimated the prevalence of e-cigarette use by frequency of use (every day vs. some days), use of other tobacco products, product characteristics (e.g., cartridges vs. refillable), and demographic characteristics (e.g., sex, age, and race/ethnicity). Logistic regression was employed to assess correlates of e-cigarette use frequency. RESULTS 5.5% (95% CI=5.3-5.8) of adults in PATH reported current e-cigarette use. Among current users, 21.3% reported using e-cigarettes every day vs. 78.7% who reported using e-cigarettes on some days. Every day e-cigarette users were more likely to report being a former cigarette smoker compared to some day users (41.9% vs. 6.9%), less likely to report dual use with cigarettes (54.0% vs. 86.0%), and less likely to currently use other combusted tobacco products (25.9% vs. 43.4%). After multivariable adjustment, every day e-cigarette use was strongly associated with having quit cigarette smoking within a year (AOR=9.84, 95% CI=7.26-13.34) and more than one year ago (AOR=5.41, 95% CI=3.56-8.23) compared to current smoking. Using a refi lable e-cigarette was also independently associated with being an every day e-cigarette user (AOR=2.25, 95% CI=1.64-3.10). CONCLUSION The majority of e-cigarette users in this study reported less than daily use. Daily e-cigarette use was associat-ed with being a former smoker, with the strongest association among recent former smokers; however, cross-sectional data preclude conclusions regarding causality.

PATH longitudinal data will allow us to examine trajectories of e-cigarette use in relation to other tobacco use within individuals over time.

Funding: This work was funded in whole or in part with Federal funds from the National Institute on Drug Abuse, National Institutes of Health, and the Food and Drug Administration, Department of Health and Human Services, under Contract No. HHSH271201100027C.

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POS3-5
AUDIENCE REACTIONS TO ANTISMOKING ADS AND ASSOCIATION WITH QUIT ATTEMPTS AMONG SMOKERS: EVIDENCE FROM THE TIPS FROM FORMER SMOKERS CAMPAIGN
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Research on prior state and national antismoking media campaigns has shown that racial/ethnic minority smokers tend to respond more favorably to antismoking ads. To our knowledge, this is the first study to validate PE as a precursor to quit attempts and reaffirms previous findings that racial/ethnic minority cigarette smokers and smokers with higher desire to quit tend to respond more favorably to antismoking ads.

Funding: This study was supported by the Centers for Disease Control and Prevention.

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POS3-6
PATTERNS IN AGE OF FIRST SMOKING AND DAILY SMOKING INITIATION AMONG YOUTH AND YOUNG ADULTS FROM 2002 TO 2013
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While adolescence has been considered a critical period for cigarette smoking initiation, recent evidence suggests increasing initiation during young adulthood. The purpose of this study is to examine smoking initiation patterns among youth and young adults. Cross-sectional data from the National Survey on Drug Use and Health were used to assess changes in patterns of age of smoking initiation among respondents aged 12-25 from 2002 to 2013. We calculated rates of smoking initiation, defined as smoking a cigarette for the first time, and daily smoking initiation, defined as first smoking cigarettes daily. Aggregated rates from 2002-2007 were compared with 2008-2013 for 12-17 year olds and 18-25 year olds overall and by gender and race/ethnicity using the chi-square statistic. The analysis data-set included 281,136 individuals at risk for 1st cigarette and 363,596 individuals at risk for 1st smoked daily. There was a decrease in smoking initiation from the early to the later time periods among 12-17 year olds (8.3% to 6.8%, respectively, p<.05) and an increase among 18-25 year olds (9.6% to 10.2%, respectively, p<.05). Decreases in smoking initiation were consistent for the younger group by gender and race/ethnicity. Increases in smoking initiation were consistent across gender and racial/ethnic subgroups for those aged 18-25, and there was a trend toward higher than average increases among Hispanic and Al/AN males. Daily smoking initiation rates decreased from 2002-2007 to 2008-2013 among 12-17 year olds (2.2% to 1.3%, respectively, p<.05) and 18-25 year olds (3.4% to 3.1%, p<.05). There was a trend toward an increase in daily smoking among 18-25 year old Al/AN females and African-American males. Changing patterns in cigarette initiation demonstrate the need to aim tobacco prevention efforts toward young adults, as well as specific gender and racial/ethnic subgroups that have experienced higher rates of first smoking and daily smoking initiation.

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POS3-7
ARE WE MINDING THE GAP? AN EXAMINATION OF TRENDS IN TOBACCO DISPARITIES BY SOCIOECONOMIC STATUS IN MINNESOTA

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BACKGROUND: Although Minnesota has consistently ranked as one of the healthiest states in the country, health disparities across socioeconomic (SES) groups persist. Differences in smoking prevalence are a well-recognized driver of general health inequalities. Despite a 35% reduction in statewide adult smoking prevalence from 22.1% in 1999 to 14.4% in 2014, smoking is more prevalent among those who have completed fewer years of education, lower income and within some racial and ethnic groups. The purpose of this research was to determine the extent to which the observed decline in overall smoking prevalence was experienced by all SES groups, as measured by educational attainment. METHODS: Data from the 2003, 2007, 2010, and 2014 Minnesota Adult Tobacco Survey were analyzed. Weighted regression analyses were utilized. Smokers, non-smokers, cigarettes per day, and non-cigarette other tobacco products (OTP) were conducted across education levels. Respondents were categorized into three groups: low education (those who had not graduated from high school or who had received a GED), middle education (those who completed high school but had not completed a 4-year degree), and high education (those who attained a Bachelor’s degree or more). RESULTS: Controlling for age and gender, a decreased rate of smoking among high and middle education groups was offset by an increase in smoking in the low education group. There was a decline in cigarettes per day in all education groups, but an increase in OTP use in the low and middle education groups. Dependence, measured by time to first cigarette, indicated no differences in trend over time by education group with those in the lower education group remaining significantly more dependent than the highest education group. CONCLUSIONS: In states such as Minnesota where smoking disparities are increasing, innovative efforts are urgently needed. Complementing known population-level strategies with community and individual-level approaches are necessary to eliminate the widening gap in smoking disparities and to end the burden of tobacco-related disease for low SES populations.

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POS3-8
GENDER DIFFERENCES IN SELF-REPORTED WITHDRAWAL AND ABSTINENCE FROM SMOKING THREE YEARS LATER: A PROSPECTIVE, LONGITUDINAL STUDY

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INTRODUCTION: The purpose of the current study was to use longitudinal data from a nationally representative sample of U.S adults to examine gender differences in self-reported withdrawal symptoms and the odds of quitting smoking three years later. METHODS: Participants from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC; Wave 1, 2001-2002, n=43,093; Wave 2, 2004-2005, n=34,653) who reported current smoking at Wave 1 were included in the analyses. Withdrawal symptoms, withdrawal-related distress, and withdrawal-related relapse were assessed at Wave 1. Smokers were classified at Wave 2 as continued smokers or quitters. RESULTS: Wave 1 current smoking women were more likely to endorse at least one withdrawal symptom (64.7% versus 55.1%; p<0.0001) and endorsed a greater average number of withdrawal symptoms (M=2.37; SE=0.05 versus M=1.78; SE=0.04; p<0.0001) compared to Wave 1 current smoking men. Women were also more likely than men to report withdrawal-related discomfort and relapse (p<0.0001). Wave 1 smokers who reported at least one withdrawal symptom were 12% less likely to report quitting smoking at Wave 2 after adjusting for demographics, smoking quantity, substance use, and psychiatric disorders. There was a significant gender difference in the relationship between withdrawal symptoms and Wave 2 quitting (β interaction=0.205; p=0.002). Women who reported any withdrawal symptoms were 20% less likely to have quit smoking at Wave 2 compared with women who did not report withdrawal symptoms (95% CI=0.71-0.90). Self-report of withdrawal symptoms at Wave 1 did not decrease the odds of quitting at Wave 2 for men (OR=0.93; 95% CI=0.85-1.03). CONCLUSIONS: Male and female current smokers differed in their report of withdrawal symptoms and the association of withdrawal symptoms to quitting smoking three years later. Men and women may benefit from different treatment approaches that target withdrawal.

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POS3-9
IMPACT OF ADVERTISING EXPOSURE FREQUENCY TO TRUTH AND ENGAGEMENT IN ANTISMOKING ACTIVITIES

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Truth, one of the largest and most successful national branded youth smoking prevention campaigns, launched a new campaign in August of 2014 with messages designed to activate young people to join a movement to end youth smoking by engaging in anti-smoking activities. The campaign launched truth-sponsored online and grassroots participatory activities as ways to join the movement. This study aims to assess whether self-reported frequency of exposure to truth campaign ads is associated with engagement in truth-sponsored antismoking activities over time, and whether youth who identify closely with the brand are more likely to engage in such activities. A probability-based online longitudinal cohort of 10,011 youth aged 15-21 was surveyed at baseline (pre-campaign launch) and 6 months later (post-launch). Participation in truth-sponsored activities was defined as engaging in at least 2 of the following behaviors in the last 6 months: visiting thetruth.com, participating in an activity on thetruth.com, talking about truth with friends or family, posting about truth on social media, attending a truth event or wearing a truth-branded item. Logistic regressions examined frequency of exposure to the truth campaign ads in the past 6 months and participation in truth-sponsored antismoking activities at follow-up, controlling for demographic, social, environmental and media utilization covariates. An interaction examined whether ad exposure frequency influenced engagement differently for youth who identified with the brand. Higher levels of exposure were associated with participation in at least 2 truth-sponsored antismoking activities at follow-up. Increased exposure to a branded multimedia smoking prevention campaign significantly increases engagement in campaign-targeted activities to end youth smoking, and can be especially effective for certain types of youth. Branded campaigns may be an especially effective strategy for youth prevention.

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POS3-10
THE 2014 NATIONAL TIPS FROM FORMER SMOKERS CAMPAIGN: RESULTS FROM A LONGITUDINAL COHORT OF SMOKERS

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Since 2012, Centers for Disease Control and Prevention’s Tips From Former Smokers (Tips) campaign, which features emotional and graphic testimonials from former smokers, has aired annually. In 2014, Tips was aired in two phases, the second of which included ads with new disease conditions. In this study, we analyzed data from a nationally representative longitudinal cohort of cigarette smokers at baseline (n=4,245) to estimate the odds of quit attempts in the past 3 months, intentions to quit in the next 30 days, and intentions to quit within the next 6 months as a function of post-campaign time following 2014 Tips Phase 2, controlling for demographics and other confounders. We assessed 6-month sustained quits us
POS3-12
PERCEIVED EFFECTIVENESS OF CIGARETTE PACK CONSTITUENT DISCLOSURES: A RANDOMIZED EXPERIMENT
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The US Food and Drug Administration (FDA) has identified 93 harmful constituents (i.e., chemicals) in cigarette smoke. As federal law requires disclosure of constituent information to the public, we sought to identify constituent messages that smokers found effective. Participants were an online convenience sample of 1,148 adult smokers. About a third of participants were low numeracy (30%) or low literacy (32%). We randomly assigned smokers to view constituent messages using a within/between subjects factorial design. Participants saw 6 messages, with each message being about a different constituent (i.e., arsenic, formaldehyde, lead, uranium, ammonia, and nitrosamines). The messages also varied in whether they 1) only noted that the constituent is in cigarette smoke (e.g., “Cigarette smoke contains arsenic.”); or stated 2) 1-2 health effect(s) caused by the constituent; 3) 1-2 product(s) the constituent is found in; or 4) both health effects and found-ins. An example of a message with both elements is “Cigarette smoke contains arsenic. This is found in rat poison and causes heart damage.” The outcome was a 3-item perceived message effectiveness scale (α = .93). We estimated multilevel models to account for repeated measures across individuals. Smokers rated messages containing information on health effects, products that constituents are found in, or both as more effective than constituent-only messages (p<.001). Effects were largest for messages containing information about health effects. Lower numeracy and literacy participants gave lower effectiveness ratings (p=.01) compared to those scoring higher on numeracy and literacy. Constituent messages were viewed as more effective when they paired a constituent with a health effect; associating constituents with toxic products (e.g., rat poison) may also enhance message impact. Constituent messages may be particularly effective for low-numeracy and low-literacy smokers.

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POS3-13
THE EFFECT OF ADVERSE CHILDHOOD EXPERIENCES ON ADULT SMOKING STATUS
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PURPOSE: Adverse childhood experiences (ACEs) have been associated with adult health risk behaviors, including smoking. This association has generally been demonstrated as a purely additive association. Limited research, however, has explored the relationship between specific ACEs, as well as the additive risk In the current study, we examined the association between individual and cumulative ACEs and smoking status in young adults ages eighteen to thirty-four years.

MATERIALS AND METHODS: We used the 2012 National Behavioral Risk Factor Surveillance System (BRFSS) data from Iowa, Oklahoma, Wisconsin, North Carolina, and Tennessee. We used logistic regression to estimate the association between individual ACEs, total ACE counts and the likelihood of ever, current, and former smoking. RESULTS: Some 19.0% of eighteen to twenty-four-year-olds and 23.9% of twenty-five to thirty-four-year-olds reported being current smokers. Less than 1% of eighteen to twenty-four-year olds were former smokers, and 23.3% of twenty-five to thirty-four-year olds were former smokers. Our findings were consistent with existing literature demonstrating an additive effect as ACE counts of two to three (OR 1.38; 95% CI: 1.17-1.63) and ACE counts four or greater (OR 2.09; 95% CI: 2.41-2.75) increased the likelihood of ever smoking. After adjusting for sociodemographic variables, three adverse experiences were associated with smoking status. Reporting a family member who used drugs (OR 1.69, 95% CI: 1.22-2.07) reporting been touched sexually by an adult (OR 1.17, 95% CI: 1.08-1.29) increased the odds of ever smoking. An incarcerated family member increased the odds of current smoking (OR 1.40; 95% CI: 1.05-1.85).

CONCLUSIONS: In conclusion, findings suggest that certain childhood experiences, specifically family member drug abuse, sexual abuse, and incarcerated family member...
confers specific risk for adult smoking, even after adjusting for sociodemographic characteristics. Likelihood of current smoking increases with greater number of ACEs. Our results provide needed information on specific risk factors for smoking persistence and contribute to a growing body of research on the relationship between adverse event exposure and smoking outcomes.

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POS3-14 DIETARY INTAKES AMONG HEAVY VS. LIGHT SMOKERS FROM THE ALPHA-TOCOPHEROL, BETA-CAROTENE CANCER PREVENTION STUDY COHORT

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Smokers on average tend to have a less adequate diet as compared to non-smokers. A limited number of studies reported that smokers consume less dietary fiber, fruit, vegetables, and fish and more alcohol and caffeine. Less is known about dietary differences between light vs. heavy smokers. We evaluated dietary intake among light vs. heavy smokers in Finnish male smokers, aged 50-69 years, in the Alpha-Tocopherol, Beta-Carotene Cancer Prevention (ATBC) Study. In addition to detailed dietary data, baseline serum levels of alpha-tocopherol and beta-carotene were measured. Out of 27,111 participants, 17,300 (63.8%) reported smoking ≥20 cigarettes/day and were classified as heavy-smokers, and 9,811 (36.2%) reported smoking <20 cigarettes/day and were classified as light-smokers. Baseline mean serum alpha-tocopherol (11.69 ± 0.03 vs. 12.13 ± 0.04 mg/l; p < 0.00001) and beta-carotene (201.90 ± 1.38 vs. 233.48 ± 1.93 ug/l; p < 0.00001) were significantly lower among heavy-smokers. Intakes of cereal (212.13 ± 0.67 vs. 221.78 ± 0.84 g/day; p < 0.00001), vegetables (110.91 ± 0.54 vs. 118.29 ± 0.71 g/day; p < 0.00001), fruits (209.91 ± 1.48 vs. 232.54 ± 1.98 g/day; p < 0.00001), and total dietary fiber (18.44 ± 19.29 g/day; p < 0.00001) were significantly lower among heavy-smokers as compared to light-smokers. However, intakes of red meat (73.14 ± 0.27 vs. 68.04 ± 0.32 g/day; p < 0.00001), processed meat (78.10 ± 0.47 vs. 69.47 ± 0.54 g/day; p < 0.00001), and alcohol (20.55 ± 0.18 vs. 13.50 g/day; p < 0.00001) were significantly higher among heavy-smokers as compared to light-smokers. Our data suggest that dietary intakes vary significantly by the level of smoking and that heavy-smokers have poorer dietary quality as compared to light-smokers. The observed differences in dietary intake in this study have important implications for cancer prevention and control efforts, suggesting a need to incorporate dietary components into tobacco cessation interventions.

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POS3-15 TOBACCO-RELATED POISON EVENTS IN THE UNITED STATES, 2001-2013

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BACKGROUND: Although the chronic health risks of cigarette smoking have been well characterized, the use of and exposure to traditional and novel tobacco products, such as e-cigarettes, may also result in a significant burden of acute adverse experiences. To protect the population from tobacco-related harms, it is essential to monitor tobacco-related poison events, characteristics and trends of these events. METHODS: This study describes the frequency and characteristics of tobacco-related poison events using data from the National Poison Data System (NPDS) between January 1, 2001 and December 31, 2013. NPDS contains information on human poison exposures collected during telephone calls into all poison control centers across the United States. Since its inception, NPDS has cumulated more than 60 million human poison exposure case records dating back to 1983, with more than two million records added annually. RESULTS: During 2001-2013, there were 103,497 tobacco-related poison events. Of those, 87.7% occurred among young children (≤6 years). Overall, 70.0% of all poison events were related to cigarettes, 9.3% were related to chewing tobacco, 5.3% were related to snuff, 2.2% were related to e-cigarettes or e-cigarette liquids, and 1.2% were related to cigars. E-cigarette related poison events increased from 31 cases in 2010 to 1,528 in 2013. More than half (55.4%) of the poison event reports provided information on medical outcomes. Of those, there were three deaths (1 related to a cigarette, 1 related to an e-cigarette, and 1 related to an unknown product), 0.1% (n=78) with a major effect reported (life-threatening or significant residual disability), 3.3% (n=1,913) with a moderate effect reported (minimal medical attention, but not life-threatening), and 37.7% (n=21,627) with a minor effect reported (minimally bothersome and generally resolved relatively easily with no residual disability or disfigurement). Of all poison event reports with information on level of care (62.2% of all reports), 0.3% (n=313) reported patients being admitted to an intensive care unit, 0.6% (n=612) being admitted to a hospital, and 15.9% being treated and released. CONCLUSIONS: Tobacco-related poison events can be serious. Young children are particularly vulnerable. Findings of this study likely represent a small portion of tobacco-related poison events due to potential underreporting. To protect the population from tobacco-related harms, it is critical to continue to monitor tobacco-related poison events.

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POS3-16 HEALTH RISKS ASSOCIATED WITH THE USE OF SMOKELESS TOBACCO PRODUCTS: ANALYSIS OF A NATIONALLY REPRESENTATIVE LINKED MORTALITY DATA SET

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BACKGROUND: Available literature suggests US smokeless tobacco products (SLT) are less hazardous than conventional lit-end cigarettes. We have added to the current body of evidence on the health risks of SLT by assessing mortality data linked to respondents from several years of national public health surveys. METHODS: We examined mortality associated with SLT and cigarettes based on mortality data from the National Death Index (NDI) records of survey respondents to the National Health Interview Survey (NHIS) (1987, 1991, 1992, 1998, 2000 and 2005). Mortality follow-up was available through 2011. This data set comprises 151,539 total observations with 29,093 mortality events, including 3,048 current SLT users with 659 mortality events and 36,990 current cigarette smokers with 7,605 mortality events. We conducted similar analyses using mortality linkages for NHANES III and Continuous NHANES. RESULTS: The adjusted all-cause mortality hazard ratio (95% CI) for all current SLT users in NHIS compared to never tobacco users was 1.045 (0.928-1.178). When the analysis was limited to males or females, the adjusted all-cause mortality hazard ratio was 1.104 (0.957-1.275) and 0.940 (0.787-1.122) respectively. In contrast, the adjusted all-cause mortality hazard ratio for all current cigarette smokers was 2.180 (2.092-2.267), for males was 2.213 (2.063-2.374) and for females was 2.151 (2.051-2.256). While these results are consistent with the well-known relationship between cigarette
smoking and premature mortality, these data suggest that, within this sample, the all-cause mortality hazard for SLT users is significantly lower than that for cigarettes. Analyses of NHANES III and Continuous NHANES yielded similar results. CONCLUSIONS: This study of the most recent mortality follow-up of SLT users from nationally representative US surveys over 24 years is one of the largest and most comprehensive assessments of mortality hazards associated with SLT use. Overall, this analysis supports current literature indicating lower risk of SLT use compared to cigarette smoking.

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POS3-17

DOES E-CIGARETTE USE INCREASE SHORT-TERM CIGARETTE SMOKING ABSTINENCE? RESULTS FROM A COHORT STUDY OF ADULT CIGARETTE SMOKERS IN THE UNITED STATES, 2014

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BACKGROUND: Evidence regarding the utility and effectiveness of electronic cigarettes (e-cigarettes) as a smoking cessation aid is inconclusive. Most previous studies do not differentiate smokers by their intended uses, there is a need to better understand the association between e-cigarette use and smoking cessation based on the use of e-cigarettes in conjunction with quit attempts. METHODS: We used 2014 data from a two-wave nationally representative longitudinal online survey of adult smokers in the United States. At current smokers at baseline (n = 10,181) were re-contacted for follow-up approximately 4 months later (n = 7,217), yielding a longitudinal retention rate of 71.0%. The analysis reported in this study are based on a subset of the cohort (n = 2,223) who completed both survey waves, were current smokers at baseline, and reported having made a quit attempt in the past 3 months at follow-up. We examined the association reported by 29% of them who reported using a single quit method, including e-cigarettes, and short-term cigarette abstinence (past 30 days) at follow-up. RESULTS: General use of e-cigarettes at baseline was not associated with abstinence at follow-up. Smokers who reported switching completely to e-cigarettes had almost 4 times greater odds of being cigarette abstinent at follow-up (aOR: 3.85, p < 0.01) than smokers who attempted to quit using other methods. Smokers who reported quitting cold turkey had 6 times greater odds of being cigarette abstinent at follow-up (aOR: 6.26, p < 0.01). Substituting some regular cigarettes with e-cigarettes, reducing the number of cigarettes smoked per day, and using nicotine replacement therapy and/or cessation medications were not associated with abstinence. CONCLUSIONS: General use of e-cigarettes among smokers did not promote short-term cigarette abstinence. However, those who switched completely to e-cigarettes or quit cold turkey had greater odds of short-term cigarette abstinence than those who used other quit methods. Evaluating how and why smokers are using e-cigarettes is important for clarifying their role as a potential cessation aid.

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POS3-18

DEVELOPMENT OF THE FDA TOBACCO CREDIBILITY SCALE (FDA-TCS)

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BACKGROUND: The effectiveness of tobacco control messages may be dependent in part on the perceived credibility of the organization sponsoring the message, such that high source credibility increases message persuasiveness. The current study describes the development and initial validation of a scale of FDA credibility as a tobacco regulator. METHODS: We developed 30 candidate items reflective of three dimensions of source credibility: trust, expertise, and intention to act in the public’s interest, as well as the four tobacco regulatory roles of the FDA: regulating tobacco manufacture, marketing, and distribution, and communicating risks of using tobacco. We tested the items in an online sample of 1353 US adults and assessed convergent validity (with a measure of general FDA credibility) and criterion validity (with a measure of support for FDA tobacco control policies). RESULTS: Factor analytic methods identified 3 dimensions of the FDA Tobacco Credibility Scale (FDA-TCS): the degree to which the FDA acts in the public’s interest (public interest, 6 items), can be trusted to protect the public (trust, 6 items), and has the expertise to be an effective tobacco regulator (expertise, 5 items). These subscales showed evidence of reliability (public interest: Cronbach’s alpha=0.95, trust: Cronbach’s alpha=0.89, expertise: Cronbach’s alpha=0.88). They also demonstrated convergent validity (correlation with general FDA credibility: public interest: r=0.64, trust: r=0.46, expertise: r=0.62, all p<0.0001) and criterion validity (with public interest, trust, and expertise explaining 6%, 1%, and 3% of the variance in support for any of four FDA tobacco control policies, respectively). As a single scale, the FDA-TCS also showed reliability (Cronbach’s alpha=0.95), convergent validity (correlation with general FDA credibility: r = 0.65, p<0.0001) and criterion validity (explaining 4% of the variance in policy support). CONCLUSIONS: The FDA-TCS scale demonstrated evidence of reliability and initial validity. This new scale will be valuable for use in future research examining the impact of source credibility on the effects of the FDA’s communications.

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POS3-19

WHAT IS BETTER FOR COMMUNICATION ABOUT CIGARETTE SMOKE CONSTITUENTS—HEALTH EFFECT OR “FOUND-IN” MESSAGE FRAMES?

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INTRODUCTION: The US FDA has authority to require cigarette pack disclosures that communicate cigarette constituent (chemical) information. Tobacco regulators in other countries are also interested in ways that accurately and effectively communicate the risks of constituents to the public. We looked at the impact of a health effect frame (e.g., “Benzene causes heart disease,”) as compared to a frame focusing on where else these chemicals can be “found-in” (e.g., “Benzene is found in gasoline”). METHODS: We conducted a nationally representative phone survey with 5,014 adults (ages ≥18) and 1,125 adolescents (13-17) and an online survey with a convenience sample of 4,137 adults (≥18). Participants each received a constituent message with a health effect, a “found-in,” both, or neither in a 2X2 between-subjects experiment. We used ANOVA to analyze the effects of the frames on self-reported discouragement from wanting to smoke. RESULTS: In all three surveys, messages with health effects caused greater discouragement than messages without (all p<0.05). Similarly, messages with found-in elicited greater discouragement than messages without (all p<0.05), although the effect size was smaller than for health effects. The health effect and found-in message frames interacted (all p<0.05). In the adult and adolescent phone surveys, post-hoc tests did not find statistically significant differences between discouragement caused by messages with a found-in alone, a health effect alone, or both frames together. However, in the online survey, messages with both frames caused greater discouragement than those with a health effect or a found-in only. CONCLUSIONS: Health effect frames were generally more potent than found-in frames in discouraging people from wanting to smoke. Messages with both frames together may elicit more discouragement than those with either frame alone in some cases. Our findings can guide policymakers in the US and other countries in developing constituent disclosures. The findings may also be applicable to health education campaigns that use constituent messaging.

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POS3-20
RECALL AND COGNITIVE AND AFFECTIVE REACTIONS TO FDA REAL COST ADS
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INTRODUCTION: In 2014 the U.S. Food and Drug Association (FDA) launched “The Real Cost” anti-tobacco ad campaign for youth, which uses radio and TV ads to graphically illustrate the long-term hazardous effects of smoking and associated loss of control due to addiction. Currently there are no published data examining the potential impact of these ads on the U.S. adult population. METHODS: Ad-related measures were administered as part of a nationally-representative phone survey of adults (N = 5014). Specifically, the survey presented ad recall and reaction measures related to four “The Real Cost” ads: a young man pulling his tooth out with pliers (Your Teeth), a young woman pulling some skin off her face (Your Skin), a tiny man bullying a teenager (Bully), and a high school girl sitting at a lunch table and talking about a bad relationship (Alison). Participants were provided a brief verbal description of one randomly assigned ad and then were asked if they had ever seen or heard the ad. If they indicated yes, they were asked to describe in a few words what they remembered. Participants who indicated exposure to the ad were asked if they felt more positive, more negative, or no different about tobacco products after seeing or hearing the ad. RESULTS: Weighted estimates for the ad recall measure indicate that 31.9% of U.S. adults recall seeing or hearing the Your Teeth ad, 41.2% recall the Your Skin ad, 26.3% recall the Bully ad, and 22.1% recall the Alison ad. No one who recalled an ad correctly identified the FDA as the sponsor. Young adults were twice as likely to accurately describe the ad as compared to older adults. Females and non-smokers had higher odds of reporting feeling more negatively about tobacco products after seeing or hearing the ad. Individuals who expressed a negative cognitive attitude when recalling the ad (e.g., “It was offensive.”) had significantly lower odds of reporting feeling more negatively about tobacco products in response to the ad. DISCUSSION: These results indicate that a notable proportion of adults in the U.S. have been exposed to, and potentially influenced by, “The Real Cost” anti-tobacco use ads.

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POS3-21
POST-QUIT STRESS MEDIATES THE RELATION BETWEEN SOCIAL SUPPORT AND SMOKING CESSATION AMONG SOCIOECONOMICALLY DISADVANTAGED ADULTS
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OBJECTIVE: Social support interventions have demonstrated limited effectiveness for preventing smoking relapse, perhaps due to the absence of a theoretical framework. Plausibly, the stress-buffering hypothesis may be a useful framework by which to understand social support in smoking cessation interventions. The current study evaluated the interrelations among social support, stress, and smoking cessation in both moderation and mediation models. METHODS: Participants (N=146) were individuals enrolled in a smoking cessation intervention study at a safety-net hospital in Dallas, Texas. Pre-quit social support was measured with the Interpersonal Support Evaluation List (ISEL) questionnaire. Smoking-specific social support was measured repeatedly during the week prior to the quit day via smartphone-based ecological momentary assessment (EMA). Self-reported stress was measured repeatedly via EMA during the week following the quit day. Logistic regression analyses were conducted to evaluate potential interaction effects of pre-quit social support and post-quit stress on the likelihood of achieving biochemically-verified 7-day point prevalence abstinence at 4 weeks post-quit. Mediation models were evaluated using bootstrapped methods to determine whether post-quit stress functioned as a mediator of the association between pre-quit social support and cessation. RESULTS: Participants were predominantly Black (62.3%) and female (57.5%); and 55% reported an annual household income of $<12,000. Participants smoked an average of 17.5 cigarettes per day at baseline. Analyses indicated that pre-quit social support did not significantly interact with post-quit stress to influence smoking cessation. However, stress was found to mediate the associations between social support variables and smoking cessation. CONCLUSIONS: Findings suggest that social support influences smoking cessation through its influence on post-quit stress among socioeconomically disadvantaged adults participating in cessation treatment. Increasing social support for the specific purpose of reducing stress during a quit attempt may be one way to improve smoking cessation rates in disadvantaged populations.

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POS3-22
E-CIGARETTE USERS’ PERCEPTIONS OF E-CIGARETTE RISKS: A QUALITATIVE ANALYSIS
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While e-cigarette use rates have steadily increased, the potential personal and population health impacts are virtually unknown. However, e-cigarette users view e-cigarettes as less harmful and less addictive than traditional cigarettes. This study aimed to understand e-cigarette users’ perceptions of risk about the products, assessed if perceptions of use differ between user groups, and whether these perceptions intersected across groups. Focus groups conducted among 18 participants in the Southeastern U.S. in 2014 were analyzed for participants’ perception of risks about e-cigarettes. Groups were defined as (1) current regular cigarette smokers who currently use e-cigarettes but are not using them to help them quit; (2) current regular cigarette smokers who currently use e-cigarettes and are using them to help them quit cigarettes; (3) former regular cigarette smokers who have been quit for over a year, did not use e-cigarettes to quit, and currently use e-cigarettes; and (4) exclusive e-cigarette users who are not former regular cigarette smokers. Thematic content analysis showed that participants across user groups overwhelmingly reported viewing e-cigarettes as “less harmful” than traditional cigarettes. Notably, participants also expressed their uncertainty about the harmfulness of e-cigarettes. Additionally, the responses expressing uncertainty were found to have connotations that leaned towards a “less harmful” view of e-cigarettes. As a result, the absence of knowing the relative risk of e-cigarettes seems to modify how harmful users view them. These findings provide insight into how to approach the development of effective messaging to address e-cigarettes. These findings also have implications for the FDA in the development of counter-messaging related to e-cigarettes as well as potentially informing FDA when they seek to make premarket approval determinations on ENDS products. Findings from this study will inform media messaging development regarding novel tobacco products, including e-cigarettes.

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POS3-23
MASS MEDIA CAMPAIGNS, QUIT ATTEMPTS, AND RISK OF RELAPSE: A LONGITUDINAL POPULATION BASED STUDY
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INTRODUCTION: Tobacco control mass media campaigns are a key element of comprehensive tobacco control strategies. When evaluating the population-level impact of these campaigns on smoking cessation behaviors, few studies have examined the effect of multiple campaigns or included the effect of news media and tobacco pharmacological cessation aid advertising. METHOD: Ontario Tobacco Survey respondents (N=4500) were asked aided recall questions for seeing various anti-tobacco campaigns over the period 2005-2011, news media on tobacco products, and for being asked to recall the last time they saw or heard an anti-tobacco campaign. RESULTS: Participants were predominantly from the 18-44 age group and had first cigarette use before age 18, with 75% reporting current smoking at baseline. Smoking cessation campaigns were found to have an impact on smoking cessation behavior, with the effect of campaigns on quitting persisting up to 18 months post-exposure. DISCUSSION: The findings highlight the importance of evaluating the impact of multiple campaigns to improve smoking cessation and the potential use of these campaigns as a smoking cessation tool.
co., and pharmaceutical ads. A false campaign was used to control for recall bias. Smoking behaviors were prospectively assessed for up to three years. Rate of making a quit attempt was assessed using generalized estimating equations; risk of relapse was assessed among those who made a quit attempt using interval censored survival analysis. Analyses controlled for demographic and smoking history characteristics. RESULTS: Anti-tobacco campaigns were more likely to be recalled by those who were female and who had fewer years of education, while pharmaceutical ads were more likely to reach married, daily smokers. Overall, recall of a mass media campaign was associated with an 11% increase in the probability of making a quit attempt compared to those who did not recall (RR: 1.11; 1.01-1.22) and an increased probability of being smoke-free for at least 30 days (RR: 1.34; 1.15, 1.43). Recall of a pharmaceutical ad or seeing a news article was also associated with an increase in the probability of reporting quit attempts at subsequent interviews (p<0.05). There was no overall significant effect of rate of relapse of mass media; however, a campaign that focused on quit tips and a campaign that respectively. CONCLUSION: Mass media campaigns had broad reach among vulnerable populations. Anti-tobacco campaigns including news media stories and pharmaceutical ads had a population level effect on encouraging quitting smoking. Some evidence was provided that specific campaigns had a greater impact on rate of relapse.

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POS3-24
POST-QUIT STRESS MEDIATES THE ASSOCIATION BETWEEN SUBJECTIVE SOCIAL STATUS AND SMOKING CESSATION AMONG SOCIOECONOMICALLY DISADVANTAGED SMOKERS MAKING A QUIT ATTEMPT

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BACKGROUND: Studies have indicated that subjective social status (SSS) predicts smoking abstinence. The current study extends previous research by examining how post-quit stress affects the link between SSS and smoking abstinence.

METHOD: Data were collected as part of a clinical trial designed to evaluate the effectiveness of offering financial incentives for smoking abstinence among socio-economically disadvantaged smokers making a quit attempt at a safety-net hospital in Dallas, Texas. SSS was measured at baseline (i.e., one week pre-quit) using 10-rung ladders (U.S. and Community) that assess perception of social status (e.g., more money, more education) with higher rungs indicating higher perceived social status. Post-quit stress was measured five times per day using smartphone-based ecological momentary assessments during the first week following a scheduled quit attempt. Adjusted logistic regression analyses were conducted to evaluate the relation between SSS and biochemically-verified 7-day point prevalence smoking abstinence at 4 weeks post-quit controlling for demographics, treatment group, pharmacotherapy treatment, and cigarettes smoked per day. Mediation analyses used the Preacher and Hayes bootstrapping SPSS macro to determine if lower SSS-U.S. and/or SSS-community increased smoking relapse through its effects on post-quit perceived stress.

RESULTS: Participants (N=142) were primarily non-White (71.8%), female (57.8%), and 55.6% had an annual household income $12,000. Higher rungs of SSS-U.S. and SSS-community predicted smoking abstinence at 4 weeks post-quit. Mediation analyses indicated that post-quit stress significantly mediated the relationships between SSS-US and SSS-community and smoking abstinence 4 weeks after the scheduled quit attempt. CONCLUSION: Findings suggest that lower perceived SSS predicted greater smoking abstinence through its effects on post-quit stress among socioeconomically disadvantaged smokers making a quit attempt. Interventions that aim to attenuate stress during the early phase of a quit attempt among those with low SSS may improve smoking cessation success in socioeconomically disadvantaged and marginalized adults.

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POS3-25
COMMUNITY CHARACTERISTICS MODERATE THE RELATIONSHIP BETWEEN PERSONAL READINESS TO QUIT AND SMOKING CESSATION AMONG TEENS

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Individual tobacco use may be linked to macro-level environmental forces such as state and county economics, political initiatives, and community demographics. Thus, it is plausible the propensity to quit smoking may be influenced by characteristicts of communities where smokers live. It is well established SES is directly related to individual smoking behavior. However, less is known about the influence of macro-county-level SES on individual smoking cessation outcomes, particularly among teens. The current study aims to identify and understand pathways through which county-level SES influences the relationship between propensity to quit smoking and successful quitting among teens enrolled in a smoking cessation program. Guided by a Socio-Ecological framework to explain interactions between complex systems and high-level tobacco control outcomes we used existing data from multiple sources, including teens enrolled in a nationally representative sample of teens participating in a smoking cessation program. Aggregated from school-based trials (1998-2012), the sample includes 8,855 teens from CO, FL, NC, NJ, WI, and WV. Multi-level analyses examined how county school district SES characteristics (Level 2) mediated the relation between individual (Level 1) quit behaviors and cessation outcomes. Level 1 data collected at baseline established the relation between key quit propensity variables (cigarettes per day (CPD), years smoked, and nicotine dependence) and quit outcomes at program completion/3-month post-baseline. Level-1 models demonstrated all three propensity variables significantly predicted follow-up CPD, p < .01. Level-2 models indicated household income and percentage of the population below age 18 living in poverty predicted changes in level-1 relationships, p < .01. Individuals in counties with lower overall incomes and higher rates of child poverty were less likely to quit regardless of CPD, years smoked, or nicotine dependence. Findings suggest individual factors such as CPD, years smoked, and nicotine dependence predict propensity to quit smoking. However, community SES may present critical barriers that necessitate tobacco control inclusive of economic initiatives.

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POS3-26
EVALUATING THE IMPACT OF SCHOOL-BASED TOBACCO INTERVENTIONS ON CHANGES TO SUSCEPTIBILITY TO FUTURE SMOKING AMONG NEVER-SMOKING YOUTH IN THE FIRST TWO WAVES OF THE COMPASS STUDY

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INTRODUCTION: Measures of susceptibility to smoking among never-smokers have been developed to identify students who are at risk of future smoking. Identifying how school-based tobacco control interventions impact these at-risk students is important for understanding their effectiveness. This analysis explored changes in school-based programs and policies related to tobacco use and the impact on student susceptibility to smoking over time. METHODS: This study evaluated the real world impact of 17 different school-based tobacco control interventions implemented at 306 schools in Ontario using data from the COMPASS Study. A cohort of never-smokers was identified in Year 1 (Y1). Changes to self-reported susceptibility to smoking were identified in Year 2 (Y2) for students in each intervention school and compared to the change among students in control schools (n=26; no change in tobacco control programming or policies). RESULTS: Between Y1 and Y2, 13.4% of non-susceptible students became susceptible to smoking and 8.1% became smokers, whereas 24.0% of susceptible students became smokers. Only 3 of 17 interventions had a significant effect on student susceptibility to smoking. Non-susceptible students at one school that fined students who were caught smoking on school property were at an increased risk of becoming susceptible (RR=1.72) and smokers (RR=1.80)
in Y1. At another school that banned students from wearing clothing with a tobacco product name or logo, non-susceptible students were at an increased risk of becoming susceptible in Y1 (RR=1.80). Finally, at one school that developed a teacher-led cessation intervention, non-susceptible students were at a reduced risk of becoming smokers in Y2 (RR=0.45). DISCUSSION: Many students who were susceptible to future smoking became smokers 1 year later. Few of the interventions had a significant influence on student susceptibility to smoking. Future evaluations of school-based tobacco control programs and policies should ensure that programs do not change the risk status of never-smoking students. Additional evaluation evidence is necessary to determine the components that successfully reduced the risk of future smoking among non-smoking students.

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POS3-27
EXPANDING EVIDENCE-BASED TOBACCO CESSATION BRIEF INTERVENTION TRAINING INTO COMPLEMENTARY AND ALTERNATIVE SYSTEMS OF CARE: RESULTS OF A PRACTICE-BASED TRIAL

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BACKGROUND: Tobacco brief behavioral intervention (BI) is a tobacco cessation best practice well-established in conventional healthcare practitioners. Complementary and alternative medicine (CAM) practitioners see significant numbers of tobacco users, but they do not systematically receive BI training. OBJECTIVES: The CAM Reach study developed and evaluated the effectiveness of a tobacco cessation BI training program and practice system intervention specifically adapted for CAM practitioners and deployed in real-world CAM practices. METHODS: The study enrolled 99 practitioners (30 chiropractors, 27 acupuncturists, 42 massage therapists). Data collection occurred at baseline, 3-, 6-, 9- and 12-months post-training. Research staff visited practice sites at approximately the same intervals to directly observe and document changes in office practice systems. Primary outcomes were three factors: Tobacco Cessation Activity, Tobacco Cessation Motivation, Non-CAM Tobacco Cessation Comfort. Mixed models were used to estimate changes from baseline at each of the times for each of the 3 three factors. Variables used in adjusted models include type of CAM practitioner, client volume (clients per week), sex, and previous tobacco training. RESULTS: The intervention resulted in significant increases in tobacco cessation activities (29.1% increase, p<.0001), CAM practitioners’ motivation and confidence in helping patients quit tobacco (11.6% increase, p<.0001), and practitioner comfort with providing information and referral for PHS guideline-based tobacco cessation aids (22.7% increase, p<.0001). CAM practitioners demonstrated significant increases in discussing use of cessation medications with their patients (OR=3.00, p<.001), and asking clients about their tobacco use as part of their routine practice (OR=3.63, p<.01). These increases occurred across all three practitioner types, despite heterogeneity in professional training, practice patterns/organization, and practice business models. CONCLUSIONS: Study results suggest CAM practitioners could be valuable partners to conventional practitioners in pursuing a common goal of reducing tobacco use among all patients.

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POS3-28
STUDIES OF SMOKING AMONG U.S. VETERANS FROM 1994 TO 2014: NUMBER AND TYPES OF PUBLICATIONS

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INTRODUCTION: There are approximately 22 million veterans in the United States (U.S.) and veterans smoke at higher rates than other U.S. adults. Reducing smoking-related disease would help lower healthcare costs and improve health outcomes for veterans. In order to clarify the current state of research on smoking among veterans, we reviewed published studies of smoking among veterans to summarize the number and content areas of publications. METHODS: A MEDLINE search identified peer-reviewed studies of smoking among veterans published through December 31, 2014. Article abstracts were individually examined to determine whether they met the inclusion criteria: (1) at least part of the sample consisted of U.S. veterans, and (2) study the prevalence or rates of smoking. Eligible papers were classified by year and content. RESULTS: Two hundred eighty-two papers studied smoking in U.S. veteran samples: 126 Medical-Focused studies (e.g., association of smoking to illness outcomes) and 156 Smoking-Focused studies (e.g., smoking rates or treatment). The number of publications in both categories increased from 1994 until 2013 and publication numbers decreased in 2013 and 2014. Medical-Focused studies examined a large range of conditions with the greatest number examining the association between smoking and cardiovascular disease (n=23), cancer (n=15), post-surgery complications or mortality (n=11), and psychiatric symptoms or disorders (n=10) among veterans. The majority of Medical-Focused studies (81.7%) reported that smoking was significantly related to at least one outcome variable. Nearly half of the Smoking-Focused studies (44.9%) reported information about smoking rates and smoking history, with fewer studies examining treatment outcomes. CONCLUSIONS: Research on smoking in veterans has increased over the past twenty years and has emphasized smoking rates and disease outcomes. However, more research is needed to assist in the development and implementation of interventions to help veterans stop smoking.

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POS3-29

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With the high cost of in-person interviews and the decreasing response rates for phone surveys, there has been a shift in mode of survey collection to web-based questionnaires. The aim of this study was to compare differences in demographic characteristics and types of tobacco used among respondents to the International Tobacco Control (ITC) survey by mode of survey, phone versus web. Data were available from 254 phone respondents and 4068 web respondents to the survey between May 2014 and April 2015. Descriptive statistics are presented and differences between the two groups were tested by the Chi-squared or Fisher’s-exact test of independence for categorical variables and student t-test for continuous variables. Types of tobacco surveyed include smokeless and dissolvable tobacco, cigars, cigarillos, pipe, hookah and e-cigarettes. There were significant differences by survey mode in race, household income, marital status, and age (p<.0001), none for sex. Telephone respondents were on average over 5 years older than web respondents. Differences by survey mode were found in the awareness of different tobacco types such as snus (p<.0001), dissolvable tobacco (p=.0012), and hookah (p=.0004). Hookah use in the past 30 days was significantly different between phone and web respondents (p=.047), however other tobacco products were not. Telephone respondents smoked more than web respondents with an average of 16 versus 12 cigarettes per day respectively (p=.0009). No significant differences in ever use of any of the products, heaviness of smoking index (HSI), or time to first cigarette after waking up. Preliminary analyses suggest that phone and web participants differ demographically and in awareness, but not use of the
different types of tobacco. Further exploration using multivariable analyses are needed to better understand survey mode effects.

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POS3-30
PUBLIC HOUSING RESIDENCY REDUCES PROTECTIVE EFFECT OF COLLEGE EDUCATION AGAINST CURRENT SMOKING
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There is a need to better understand high rates of smoking among impoverished African-American populations. In the general population, college education is a protective factor against current smoking. However, this may differ based on public housing residency. We surveyed Norfolk, VA public housing residents and found that attending college failed to protect against current smoking (OR = 0.94, 95% CI [0.77, 1.14], n = 1228). We then examined a nationally representative sample based on the Tobacco Use Supplement of the Current Population Survey (TUS-CPS). We confirmed that college education does protect against current smoking in the general population (OR = 0.64, 95% CI [0.54, 0.75], n = 186,973). However, there were significant differences based on public housing residency (OR = 1.53, 95% CI [1.11, 2.11], n = 186,973); college attendance continued to show a strong protective effect against smoking for non-residents in interaction models (OR = 0.62, 95% CI [0.53, 0.72], n = 172,815) but again failed to confer protection to the national sample of public housing residents (OR = 0.96, 95% CI [0.68, 1.35], n = 14,158). Individuals who were demographically similar to our local sample (i.e., official poverty status and African American race), but who did not live in public housing also exhibited the protective effect associated college education (OR = 0.62, 95% CI [0.40, 0.98], n = 9,283). Further analysis of the local sample shows that length of time spent in public housing may play a role. Interaction analyses suggest the protective effect of college education varied based on length of residency (OR = 2.04, 95% CI [1.22, 3.41], n = 1228). New residents (<3 years) exhibited a protective effect similar to national data (OR = 0.63, 95% CI [0.45, 0.89], n=671), but college education failed to confer a protective effect for long-term residents (OR = 1.29, 95% CI [0.84, 1.98], n=557). Although the mechanism of this relationship is currently unclear, these findings suggest long-term public housing residency may reduce the traditionally positive influence of higher education and increase the intractable nature of cigarette smoking.

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POS3-31
RATES AND CORRELATES OF TOBACCO CESSION SERVICE USE BY VETERANS WITH POSTTRAUMATIC STRESS DISORDER: A REVIEW OF NATIONAL VHA ADMINISTRATIVE DATA
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Veterans with posttraumatic stress disorder (PTSD) have high lifetime rates of smoking and often have substantial difficulty with quitting. However, relatively research has focused on the use of VHA tobacco cessation counseling by Veterans with PTSD and the characteristics of Veterans with PTSD who use and who do not use these services. The present study is an analysis of national VHA administrative data (N=5,531,379) from Fiscal year 2012 that was used to identify rates of use of VHA tobacco cessation counseling for Veterans with PTSD with a diagnosis of tobacco use disorder (TUD) and the correlates of intensive tobacco cessation counseling use. About 5.5% of Veterans with PTSD diagnosed with a TUD used VHA tobacco cessation services. Veterans with PTSD who used intensive tobacco cessation counseling services were more likely to be homeless, have a comorbid drug use disorder, and used other VHA services more frequently than Veterans with PTSD who did not use tobacco cessation services. The use of VA outpatient mental health services was the largest contributor to tobacco cessation counseling use by Veterans with PTSD. The results also showed that large percentages of Veterans with PTSD and a TUD with medical conditions tied to smoking were not more likely to engage in tobacco cessation services than Veterans without these conditions, despite the importance of tobacco cessation for these Veterans. Future efforts should focus on increasing provider and Veteran awareness and accessibility of VHA tobacco cessation counseling and the integration of VHA tobacco cessation services in other clinical services.

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POS3-32
PSYCHOMETRIC EVALUATION AND CROSS-CULTURAL VALIDATION OF THE PERCEIVED RISK INSTRUMENT (PRI) TO MEASURE PERCEIVED RISKS ASSOCIATED WITH THE USE OF TOBACCO AND NICOTINE-CONTAINING PRODUCTS
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Philip Morris International undertook the development of a new self-reported measure, the Perceived Risk Instrument (PRI[1]), to quantify consumers’ perceived risks of various types of tobacco and nicotine-containing products (including conventional cigarettes, nicotine replacement therapies, and modified risk tobacco products). The present contribution reports the findings pertaining to the psychometric evaluation and cross-cultural validation of the PRI. A cross-cultural development was undertaken, consisting of two stages. In Stage 1, Rasch Measurement Theory (RMT) methods were used to identify the best indicators of perceived risks of tobacco products. This led to an 18-item Perceived Health Risk scale and a 7-item Perceived Addiction Risk scale, complemented by two single items assessing Perceived Harm to Others. Findings from Stage 1 data supported the summation of items to form a total score for each of the two scales, as well as comparability across types of perceived risks, tobacco products, populations with different smoking status or cultural background (based on Differential Item Functioning). Construct validity was supported by the inter-scale correlations and findings from the known group tests..

[1] For more information about the conditions to access and use of the PRI, please contact the Mapi Research Trust at e-mail: PRO-information@mapi-trust.org ; website: http://www.progold.org

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POS3-33
ESTABLISHING CROSSWALKS BETWEEN THREE LEGACY MEASURES OF NICOTINE DEPENDENCE AND THE RECENTLY DEVELOPED PROMIS NICOTINE DEPENDENCE ITEM BANK
Maria Edelen*1, Mark Hansen1, Li Cai2, Megan Kuhfeld1, Brian Stucky3, 1RAND Corporation, MA, USA, 2University of California, Los Angeles, CA, USA, 3RAND Corporation, CA, USA

The PROMIS Smoking Initiative has developed a set of item banks and short forms for standardized assessment of six smoking-related constructs: Nicotine Dependence; Coping, Emotional and Sensory, Health, and Psychosocial Expectancies;
and Social Motivations for smoking. An advantage of the PROMIS item banks is that scores obtained from different methods of administration are on a common scale, allowing comparability of results across studies. However, researchers may also be interested in relating the PROMIS scales to existing instruments (i.e., legacy measures). In this study, we apply multidimensional IRT modeling to establish scoring crosswalks between the PROMIS Nicotine Dependence item bank (PROMIS-ND) and three legacy measures of dependence: the Fagerstrom Test for Nicotine Dependence (FTND), the Brief Questionnaire of Smoking Urges (BQSU), and the Primary Dependence Motivations scale from the Brief Wisconsin Smoking Inventory of Smoking Dependence Motives (WISDM-PDM). A sample of 491 adult smokers completed the 8-item PROMIS-ND short form, as well as the 6-item FTND, the 10-item BQSU, and the 16-item WISDM-PDM. We first conducted separate IRT calibrations to obtain item parameter estimates for each of the legacy measures. We then fit a series of multidimensional IRT models in which we estimated the correlation between the latent constructs measured by the PROMIS-ND and each legacy measure. Finally, we used the item and structural parameter estimates to obtain projected PROMIS-ND scale scores for each possible summed score on the legacy measures. The potential utility of each legacy measure crosswalk to the PROMIS-ND was evaluated by estimating a marginal reliability coefficient of the predicted PROMIS-ND scores projected from the FTND (0.44), BQSU (0.41), and the WISDM-PDM (0.88). Among the legacy measures examined, only the WISDM-PDM is both sufficiently reliable and adequately correlated with PROMIS-ND to provide precise score estimates on the PROMIS-ND scale. However, the other crosswalks—despite their lower marginal reliability coefficients—provide useful information about the way these legacy measures relate to the recently developed PROMIS-ND item bank.

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**POSTER SESSION 3**  •  Friday, March 4, 2016  •  11:30 a.m.-1:00 p.m.

**POSS3-35**

**SMOKERS HAVE A HARDER TIME FINDING WORK: RESULTS FROM A ONE-YEAR PROSPECTIVE STUDY**

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Cross-sectional studies have consistently found higher smoking prevalence among unemployed jobseekers relative to employed workers. Our analysis of 2012 California statewide data found 21% of jobseekers were smokers compared to 15% of the employed. In our survey of 252 jobseekers recruited from Bay Area unemployment centers, current smokers were more chronically unemployed than nonsmokers. We used a fully adjusted model, only current smoking and older age significantly predicted duration of unemployment, median days out of work was 360 for smokers vs. 180 for nonsmokers, and longer among those smoking within 5 min of waking (median of 555 days). One-year later, the current analyses examined differences in re-employment by smoking status among these 252 jobseekers. The sample (52% smokers) was 66% male, 52% never married, 40% unskilled/untrained housed, 69% with income <$20,000/year, mean age 48 (SD=11); 38% White, 36% Black, 26% other; 29% treated prior for alcohol/drugs; 20% had a criminal history; and 28% lacked reliable transportation. Smokers averaged 13 cigarettes/day (SD=11) at baseline. At 12-months (with 80% retention), 29% of smokers compared to 59% of nonsmokers were reemployed (OR=3.5, 95%CI: 1.95, 6.29). In a logistic regression adjusting for age, race/ethnicity, obesity, marital status, education, county, transportation, criminal history, drug/alcohol treatment, unstable housing, smoking status, and chronicity of unemployment, only nonsmoking status (OR=2.49, p=.026), younger age (20-39 vs. 50+, OR=4.56, p=.002; 40-49 vs. 50+, OR=2.43, p=.048), and 6 months or less time out of work at baseline (OR=2.28, p=.018) significantly predicted re-employment at one year, full model X2=47.4, p<.001, R2=0.22; the effect for obesity was marginal OR=0.44, p=.063. Among smokers, those smoking with 5 min of waking compared to later were significantly less likely to find work (12.5% vs. 37.3%, p=.009). In this first study to prospectively track re-employment success by smoking status, smokers had a lower likelihood of re-employment at one-year. In a randomized trial, we now are testing a tobacco cessation intervention for increasing re-employment success.

Funding: TRDRP Pilot CARA #21BT-0018 and Research Award #24RRT-0035

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**POSS3-36**

**TRANSITIONS IN LATENT PATTERNS OF USE AND CO-USE OF FIVE TOBACCO PRODUCTS AMONG ADOLESCENTS**

Jimi Huh*, Adam Leventhal, University of Southern California, CA, USA

**INTRODUCTION:** Adolescents are increasingly using multiple, different types of tobacco products, but the most typical patterns of teen use and co-use of tobacco products are not clear, nor is the likelihood of transitioning one’s use pattern over time. Mixture modeling can identify a parsimonious set of classes describing use and co-use patterns, which can be extended to analyzing transition in use patterns over time with latent transition analysis (LTA). In this study, we estimated latent status prevalence and transition of tobacco product use among youths at Time 1 (T1; Fall ’13) and 6-month follow-up (T2; Spring ’14). METHODS: A longitudinal survey of substance use among high school students in Los Angeles, California (N=3,396; T1 mean age = 15.8 years) collected data on 6 month any-use (yes/no) at T1 and co-use of: (1) conventional cigarette, (2) e-cigarettes, (3) hookah, (4) blunt (i.e., marijuana rolled in a tobacco cigar casing), and (5) small/large cigarettes. RESULTS: A 3-latent status solution best fit the data that included the following classes: 1) E-cig/Hookah Co-Users most likely to use these 2 products (T1 prevalence: 21%, T2: 27%), 2) Non-users of any product (T1: 75%, T2: 64%), and 3) Poly-Product Users of all 5 products (T1: 4%, T2: 8%). Among all who changed status from T1 to T2, transition was most likely among E-Cig/Hookah Co-Users at T1 to Poly-Product Users at T2 (probability = .19), followed by Non Users transitioning to E-cig/Hoo-
In August 2014, truth, one of the most successful youth smoking prevention campaigns, re-launched a renewed campaign nationwide. The new campaign focuses on the reduced prevalence of smoking among teenagers in the United States, but higher smoking prevalence continues to cluster in the South and Midwest regions. This study aims to assess whether geography is associated with changes in attitudes related to joining a movement to end smoking, brand awareness and ad receptivity. A probability-based online longitudinal cohort of 10,011 youth aged 15-21 was surveyed at baseline (pre-campaign launch) and 6 months later (post-launch). The following 4 regions were compared 1) Northeast/Mid-Atlantic 2) Southeast/Midwest 3) West 4) Southwest. The joining a movement outcome was based on a 4-item scale with responses ranging from strongly disagree (0) to strongly agree (4). Social movement items included “I would be part of a movement to end smoking” and “Taking a stand against smoking is important to me”. Brand awareness included those who answered “yes” to recognizing the truth logo. Receptivity was measured using “I know about e-cigarettes” and “I know about electronic cigarettes and conventional cigarettes?” Marketing claims communicated by salespeople were recorded upon exit of the simulated customer interaction. RESULTS: Seventy-seven simulated customer interactions were completed. Of 13 marketing claims identified in the literature, the most common was that flavors were available for electronic cigarettes (n = 45, 58.4%) followed by claims that e-cigarettes helped smokers quit (n = 42, 54.5%). The three next most commonly made claims about e-cigarettes related to electronic cigarettes being healthier than conventional cigarettes (n = 40, 51.9%), cleaner than conventional cigarettes (n = 35, 45.5%), and cheaper than conventional cigarettes (n = 30, 38.9%). Of the 13 possible marketing claims recorded, all were mentioned at least once. CONCLUSIONS: A wide range of marketing claims are made about electronic cigarettes in retail settings. Future efforts to heighten public awareness of electronic cigarettes and to regulate marketing of electronic cigarettes should focus on most commonly made claims but not overlook the wide range of claims made.

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POS3-37

REGIONAL DIFFERENCES ON TOBACCO RELATED ATTITUDES AND TRUTH AWARENESS

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In August 2014, truth, one of the most successful youth smoking prevention campaigns, re-launched a renewed campaign nationwide. The new campaign focuses on the reduced prevalence of smoking among teenagers in the United States, but higher smoking prevalence continues to cluster in the South and Midwest regions. This study aims to assess whether geography is associated with changes in attitudes related to joining a movement to end smoking, brand awareness and ad receptivity. A probability-based online longitudinal cohort of 10,011 youth aged 15-21 was surveyed at baseline (pre-campaign launch) and 6 months later (post-launch). The following 4 regions were compared 1) Northeast/Mid-Atlantic 2) Southeast/Midwest 3) West 4) Southwest. The joining a movement outcome was based on a 4-item scale with responses ranging from strongly disagree (0) to strongly agree (4). Social movement items included “I would be part of a movement to end smoking” and “Taking a stand against smoking is important to me”. Brand awareness included those who answered “yes” to recognizing the truth logo. Receptivity was measured using “I know about e-cigarettes” and “I know about electronic cigarettes and conventional cigarettes?” Marketing claims communicated by salespeople were recorded upon exit of the simulated customer interaction. RESULTS: Seventy-seven simulated customer interactions were completed. Of 13 marketing claims identified in the literature, the most common was that flavors were available for electronic cigarettes (n = 45, 58.4%) followed by claims that e-cigarettes helped smokers quit (n = 42, 54.5%). The three next most commonly made claims about e-cigarettes related to electronic cigarettes being healthier than conventional cigarettes (n = 40, 51.9%), cleaner than conventional cigarettes (n = 35, 45.5%), and cheaper than conventional cigarettes (n = 30, 38.9%). Of the 13 possible marketing claims recorded, all were mentioned at least once. CONCLUSIONS: A wide range of marketing claims are made about electronic cigarettes in retail settings. Future efforts to heighten public awareness of electronic cigarettes and to regulate marketing of electronic cigarettes should focus on most commonly made claims but not overlook the wide range of claims made.

Funding: Research reported in this presentation was funded by National Cancer Institute of the National Institutes of Health under award numbers P20 CA174292 and P20 CA174188.

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POS3-38

RETAIL MARKETING CLAIMS IN TOBACCO AND E-CIGARETTE SHOPS

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BACKGROUND: Electronic cigarettes are increasingly popular but currently unregulated. Public perception and adoption of electronic cigarettes will depend on how they are marketed through various channels. PURPOSE: The purpose of this study is to assess the marketing claims made about electronic cigarettes by salespeople in tobacco and electronic cigarette shops in three ethnically diverse communities in Southern California. METHODS: Young adults aged 19-23 were recruited and trained to serve as simulated customers. Simulated customers were randomly selected to enter a tobacco or e-cigarette shop, tell them they were interested in e-cigs for a friend or family member who smoked, or for themselves as smokers. Simulated customers asked salespeople two questions: “Can you tell me about e-cigarettes?” with a follow up question, “What’s the difference between electronic cigarettes and conventional cigarettes?” Marketing claims communicated by salespeople were recorded upon exit of the simulated customer interaction. RESULTS: Seventy-seven simulated customer interactions were completed. Of 13 marketing claims identified in the literature, the most common was that flavors were available for electronic cigarettes (n = 45, 58.4%) followed by claims that e-cigarettes helped smokers quit (n = 42, 54.5%). The three next most commonly made claims about e-cigarettes related to electronic cigarettes being healthier than conventional cigarettes (n = 40, 51.9%), cleaner than conventional cigarettes (n = 35, 45.5%), and cheaper than conventional cigarettes (n = 30, 38.9%). Of the 13 possible marketing claims recorded, all were mentioned at least once. CONCLUSIONS: A wide range of marketing claims are made about electronic cigarettes in retail settings. Future efforts to heighten public awareness of electronic cigarettes and to regulate marketing of electronic cigarettes should focus on most commonly made claims but not overlook the wide range of claims made.

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POS3-39

USING MARKERS OF NEIGHBORHOOD STABILITY TO EXPLAIN DISPARITIES IN TOBACCO RETAILER DENSITY: EVIDENCE FROM A U.S. STUDY

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INTRODUCTION: Evidence of racial/ethnic disparities in tobacco retailer density is limited by three factors: (1) Limited attention to spatial dependence, (2) studies from single counties or states that may not be generalizable nationally, and (3) an unclear theory-based relationship between neighborhood composition and tobacco retailer density. Advancing Science and Policy in the Retail Environment (ASPiRE) aimed to address these gaps in the literature. METHODS: The ASPiRE study examined correlates of density in a random sample of 97 counties from the contiguous US. Two independent lists of likely tobacco retailers were used to compute density, defined as tobacco retailers per 1,000 population in census tracts (n=17,667). Because spatial dependence was identified by Moran’s I (p<0.01) in the dependent variable and OLS regression error terms, we used spatial regression in GeoDa software and an estimated covariance function for errors as a function of the distance between census tract centroids in R statistics. We examined density as a function of race, ethnicity, and income, and other indicators identified from city planning literature to indicate neighborhood stability (% renters, % vacant housing). RESULTS: The average density was 1.3 retailers per 1,000 persons, and positively skewed (IQR= 0.4 to 1.7). In unadjusted models, retailer density was positively associated the proportion of Black residents and negatively associated with proportion of White residents and median household income. There was no association with proportion of Hispanic residents. Indicators of neighborhood stability explained much of the variation in density that was attributed to race and income, and reversed the direction of association between density and the proportion of Black and White residents. CONCLUSION: Our work strengthens the evidence of disparities in tobacco retailer density by race and income and compares two techniques to address spatial dependence. Given the role of neighborhood stability in explaining variation in density, further research is needed to understand the mechanisms by which disparities in density occur in order to develop policy interventions.

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POS3-40
DO TARGETED OUTREACH METHODS INCREASE SMOKERS’ RE-ENGAGEMENT IN QUITLINE SERVICES? RESULTS FROM A RANDOMIZED QUALITY IMPROVEMENT PROJECT

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BACKGROUND: Relapse is common among individuals who quit tobacco and repeated attempts are often needed before successful quitting. Few treatment programs, including quitlines, systematically re-engage past participants, which could be an important way to support additional quit attempts. This project tested the effectiveness of using multiple outreach methods to re-engage participants in QUITPLAN® Services at varying times after their initial service selection. METH-ODS: 3,028 QUITPLAN Services participants who had either selected a two week starter kit of nicotine replacement therapy (NRT) or had enrolled in the QUITPLAN Helpline but completed 0 or 1 counseling calls (low phone program engagement) were randomized into one of two groups: control or intervention. Participants, who enrolled between January 14 and April 25, 2015, were then divided into subgroups based on their registration date to examine re-engagement rates at 1, 2, or 3 months post-enrollment. The control group received either no outreach or a single email contact. The intervention group received a combination of text, email, and contact recruitment (OBR) calls (depending on contact methods participants consented to receive) designed to offer re-enrollment to participants not yet quit. We assessed re-engagement rates at 90 days post-outreach, defining a re-en-gagement as selection of one or more QUITPLAN Services (quitline calls, written materials, emails, text messages, or NRT) after the start of outreach. RESULTS: Overall, 3.1% of the control group and 14% of the intervention group re-engaged. There were no significant differences in re-engagement rates among those who were contacted at 1, 2, or 3 months after their initial enrollment. The majority of reengagements occurred during OBR. Contributors to reengagement, subgroups more likely to reengage, and cost-effectiveness of outreach will be presented. CONCLUSION: Proactive outreach yielded rates of re-engagement in services four times higher than rates for participants in the control group. Targeted outreach for program re-engagement may be a cost-effective strategy compared to other methods of increasing treatment reach (e.g., paid media).

Funding: ClearWay Minnesota
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POS3-41
LIGHT SMOKING AMONG COLLEGE STUDENTS: A POTENTIAL GATEWAY TO RISKY SOCIAL CONTEXTS AND ALTERNATIVE TOBACCO USE

Xiaoyin Li*, Alexandra Loukas1, Cheryl Perry2, The University of Texas at Austin, TX, USA, 2The University of Texas Health Science Center at Houston, School of Public Health - Austin Regional Campus, TX, USA

INTRODUCTION: Light smoking is associated with alcohol consumption and increased susceptibility to alternative tobacco product use. Concurrent use of cigarettes with alcohol or with alternative tobacco products, even among very light smokers, may be harmful. However, smoking while drinking and using alternative tobacco products in college-aged light smokers has not been explored. The purpose of this study is to examine alcohol-related social contexts and alternative tobacco product use (e.g., e-cigarettes, cigars, hookah) among a sample of light and heavier current smoking college students. METHOD: Participants were 1161 18-29 year old (M age=21.15; SD=2.72; 52.7% female; 41.2% non-Hispanic white) current or past 30-day smokers, drawn from a larger study (N=5482). All participants attended one of 24 colleges in Texas and completed an online tobacco survey. Current smokers were categorized as light smokers (1-5 cigarettes per day; 85.9%) and heavier smokers (≥6 cigarettes per day). RESULTS: Chi-square and t-test analyses indicated that compared to heavier smokers, light smokers were significantly more likely to be younger, ethnic minorities and social smokers. Light smokers reported using cigarettes on fewer days (p<.001) than heavier smokers and were more likely to go to bars during the past 6 months (p=.018) and to smoke only when drinking alcohol (p=.001). Compared with heavier smokers, light smokers were less likely to use e-cigarettes (p=.008), but more likely to use cigars (p=.005) concurrently. The two groups did not differ on concurrent hookah and smokeless tobacco use. However, light smokers reported higher intention to use cigars (p=.005) and hookah (p<.001) in the next 12 months, but lower intention to use e-cigarettes in the future. CONCLUSIONS: Smokers who use cigarettes at lower levels might be more vulnerable than heavier smokers to alternative tobacco product use and other risky behaviors, particularly alcohol use. Smoking intervention programs and campus policies should promote healthier alcohol-free social events for college students; thereby preventing light smokers from smoking while drinking and initiating alternative tobacco product use.

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POS3-42
DO E-CIGARETTES SUBSTITUTE FOR CIGARETTES OR ADD TO THE PREVALENCE OF ADOLESCENT TOBACCO PRODUCT USE? INSIGHTS FROM TWO DECADES OF SOUTHERN CALIFORNIA STUDIES

Jessica Barrington-Trimis*, Robert Urman, Adam Leventhal, W. James Gauderman, Tess Boley Cruz, Tamika Giroleth, Jennifer Unger, Kiros Berhanie, Jonathan Samet, Rob McConnell, University of Southern California, CA, USA

BACKGROUND: Adolescent e-cigarette use has increased rapidly in recent years, but it is unclear whether e-cigarettes are merely substituting for cigarettes, thus acceler-ating the decline in smoking prevalence, or whether e-cigarettes are instead increasing the prevalence of total adolescent tobacco product use through promot-ing initiation of e-cigarette use by those who would not otherwise have smoked. To understand the role of e-cigarettes in overall tobacco product use, we examine prevalence rates from Southern California adolescents over two decades. METH-ODS: The Children’s Health Study is a longitudinal study of cohorts reaching 12th grade in 1995, 1998, 2001, 2004 and 2014. Cohorts were enrolled from entire classrooms in schools in selected communities in primary and secondary school and followed prospectively through completion of secondary school. Analyses used data from grades 11 and 12 of each cohort (N=5490) to evaluate trends from 1994-2014 in the prevalence of ever or current (past 30 day) cigarette use (all cohorts) or e-cigarette use (2014 only). RESULTS: Among 12th grade students, the combined adjusted prevalence of current cigarette or e-cigarette use in 2014 was 13.7%. This was substantially greater than the 9.0% adjusted prevalence of current cigarette use in 2004, before e-cigarettes were available (p=0.003) and only slightly less than the 14.7% adjusted prevalence of smoking in 2001 (p=0.54). Similar patterns were observed for prevalence rates in 11th grade, for rates of ever use, and among both males and females, and both Hispanic and Non-Hispanic White adolescents. CONCLUSIONS: Smoking prevalence among Southern Calif-ornia adolescents has declined over two decades, but the combined rate of ciga-rette or e-cigarette use in 2014 was as high as the prevalence of smoking 10 to 15 years earlier, before e-cigarettes were available. The high prevalence of combined e-cigarette or cigarette use in 2014, compared with historical Southern California smoking prevalence, suggests that e-cigarettes are not merely substituting for cigarettes, and indicates that e-cigarette use is occurring in adolescents who would not otherwise have used tobacco products.

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POS3-43
ILLUSTRATING THE CHANGING TOBACCO LANDSCAPE: RISK CHARACTERIZATIONS OF YOUTH SINGLE, DUAL, AND POLY TOBACCO USERS

Kimberly Horn*, Malha Ali, Laurel Curry, Tiffany Gray, Diane Martinez, Milken Institute School of Public Health at George Washington University, DC, USA

Little is known about the growing phenomenon of concurrent tobacco use or dis-tinctions among youth who are single, dual, or poly tobacco users. With wide-spread availability of a myriad of tobacco products, effective prevention and in-
tervation strategies can no longer center on cigarette smoking alone. Tobacco control initiatives must reflect this changing tobacco landscape. It is critical to understand distinct risk profiles of concurrent tobacco users and determine differences in the functional value of various tobacco products. Using data from the 2012 National Youth Tobacco Survey (n=24,658), including US Middle and High School youth, ages 9 to 18 the present study developed mutually exclusive categories of single, dual, and poly tobacco use defined as use of only one, two, and any three or more tobacco products in the last 30 days. Multinomial logistic regression established three exclusive tobacco groupings characterized by established risk domains. Resulting risk characterizations were transposed into visual illustrations to foster translation of distinct user profiles to research and practice audiences. Among youth using tobacco in the past 30 days (n=5,030), the majority were poly users (56.9%), followed by single (26.4%), and dual users (16.1%). Multivariable models showed higher levels of nicotine dependence among poly users compared to single (RRR=3.14, p<0.001) and dual users (RRR=2.48, p<0.001). Poly users were less likely to express quit intent compared to single (RRR 0.68, p<0.001) or dual users (RRR=0.77, p=0.05). High tobacco harm perceptions were more likely among dual relative to single product users (RRR=1.54, p<0.05); poly users were less likely to perceive harm (RRR=0.56, p<0.0001). Visual illustrations convey distinct profiles, including racial and gender differences. Compared to poly, dual users expressed higher quit intent and risk perceptions suggesting different use motivations. Significant distinctions among single, dual, and poly用户 suggested tobacco control research should consider these characterizations and the expanding role of non-cigarette tobacco products in future strategies to reduce nicotine addiction among US youth.

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POS3-44
IMPACT OF FLAVORS IN TOBACCO PRODUCTS ON PERCEPTION AND USE BEHAVIORS: A SYSTEMATIC REVIEW
Li-Ling Huang*, Clare Meernik, Hannah Baker, Leah Ranney, Amanda Richardson, Adam Goldstein, University of North Carolina at Chapel Hill, NC, USA

BACKGROUND: The Food and Drug Administration (FDA) banned non-menthol flavors in cigarettes in 2009, but flavors in other increasingly popular tobacco products have not been regulated. This systematic review examines the impact of non-menthol flavors in tobacco products on tobacco use perceptions and behaviors. METHODS: English-language peer-reviewed publications indexed in four databases were searched as far back as the databases are indexed until 2015. A search strategy was developed related to tobacco products and flavors. Of 1,404 articles identified, we excluded articles that assessed menthol-flavored tobacco products only and articles that did not contain original data on outcomes for tobacco use and perceptions with regard to flavors. Two researchers extracted the data independently with a validated study quality assessment tool. RESULTS: Forty-one studies met the inclusion criteria. Users of flavored tobacco products were less likely to perceive harm (RRR=0.56, p<.0001), and often involve multiple tobacco products. Analysis of multiple product use is challenging in part due to the large sample sizes necessary. We examine associations between current use (past 30 day) of e-cigarettes and a range of other tobacco products (OTPs) using a large dataset (N=58,070) collected among middle and high school students in Florida during 2014. Among the youth in the sample who reported current use of e-cigarettes (N=4,824, 7.8%), we found that 65.3% also reported current use of one or more OTPs (cigar, smokeless, hookah, snus or bidis/kratka/pipe). Multinomial logistic regression results show current established cigarette smoking (past 30 day, 100+ in lifetime) is strongly associated with current e-cigarette use (aRRR=25.6, p<.001) relative to never e-cigarette use (controlling for current use of OTPs, e-cigarette perceptions and demographic characteristics). However, current use of each of the five OTPs measured showed independent statistically significant positive associations with e-cigarette use in the model as well. Reporting perception that e-cigarettes are addictive was negatively associated with current e-cigarette use (aRRR=.46, p<.001). Current use of traditional cigarettes (aRRR=17.2, p<.001), cigars (aRRR=1.7, p<.001), smokeless (aRRR=1.8, p<.01) and hookah (aRRR=2.0, p<.001) also showed significant independent associations with former e-cigarette use (ever use, no past 30-day use). Findings suggest that while youth e-cigarette use is strongly associated with traditional cigarette smoking, use of OTPs shows independent associations. Associations between traditional cigarette, cigar, smokeless and hookah use with
current and former e-cigarette use are consistent with youth experimenting with multiple tobacco products including e-cigarettes. The influence of e-cigarettes on youth tobacco use behaviors and trajectories should be considered in light of concurrent and multiple OTP use patterns.

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**POS3-47**

**PREDICTORS OF ADOLESCENTS’ FIRST TOBACCO PRODUCT AND ASSOCIATIONS WITH CURRENT TOBACCO USE**

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BACKGROUND: For adolescent tobacco use prevention efforts, it is important to understand which tobacco products are used first and by whom, as well as the relationship between first product and current tobacco use. METHOD: We conducted a nationally-representative phone survey of 1125 adolescents (ages 13-17). Adolescents reported on the first tobacco product they had ever tried, as well as current use of several types of tobacco products. RESULTS: 18.7% of adolescents (N=210) reported ever using a tobacco product; they were 59% male and 40.7% white. The most common first tobacco product tried was cigarettes (36.2%), followed by smokeless tobacco (SLT; 21.0%), electronic nicotine delivery systems (ENDS; 20.0%), hookah (11.0%), and little cigars/cigarillos (LCCs; 9.1%). Multivariable regression analyses showed that females were 3.9 times more likely than males to try cigarettes first (53.5% vs. 24.2%), but males were 58.8 times more likely to try SLT first (34.6% vs. 1.2%). Those whose mothers had less than a 4-year college degree were 2.9 times more likely to report cigarettes as their first product, whereas those whose mothers had at least a 4-year college degree were 4.4 times more likely to report hookah as their first product. Compared to adolescents living in the South, those who lived in other US regions were more likely to report ENDS as their first tobacco product. Those who reported cigarettes or LCCs as their first product were more likely to be current cigarette smokers (p < .01). Using cigarettes, SLT, or LCCs first was associated with current LCC use (p < .01). ENDS as first product was not significantly associated with current use of any tobacco.

CONCLUSIONS: Nearly 1 in 5 adolescents had tried a tobacco product. Females were more likely than males to try cigarettes first, but males were more likely to try SLT first. Those who initiated with cigarettes or LCCs were more likely to be current users of those products. Mothers’ education was associated with both cigarette (lower education) and hookah (higher education) trials. These findings provide valuable guidance for targeted interventions to prevent and deter adolescents from using tobacco products.

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**POS3-48**

**EMPIRICALLY-DRIVEN LATENT CLASSES OF “SOCIAL SMOKERS” IN U.S. YOUNG ADULTS**

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The phenomenon of “social smoking,” or smoking primarily in social contexts, emerged in the past decade as an important area of research, largely due to the high prevalence of this behavior in college students, a group of young adults who often engage in a variety of health-risk behaviors at high rates. The purpose of this study was to identify clusters of ever-smokers in two contemporary cohorts of young adults and to determine common characteristics of these clusters, particularly social smoking young adults. The current study leverages information from a sample initially recruited as adolescents from the Chicago metropolitan area (SECAP; n = 927), and a national sample of young adults aged 18-24 (Truth Initiative Young Adult Cohort Study, or “YA Cohort”; n = 1,564). Latent class models included all available measures of social smoking (i.e., self-identified smoking status, social smoking behavior, confidence resisting smoking in social situations, alcohol use, smoking context, and social smoking beliefs), but no tobacco use measures. They were run with two through eight classes to find the model that best fit the data. The optimal models selected based on BIC, entropy, and the odds of correct classification identified four latent classes of young adult ever smokers in the SECAP data and three latent classes in the YA Cohort data. Common classes across the two cohorts were nonsmokers (35% SECAP, 52% YA Cohort), social smokers (32% SECAP, 18% YA Cohort), and smokers (28% SECAP, 30% YA Cohort). In both samples, social smokers were less likely to be white and more likely to be educated compared to smokers. The additional class in the SECAP data was a class of “social believers” (5%) who were characterized by their beliefs that “smoking helps you fit in with other people” and “smoking makes it easier to be sociable with others.” The current study demonstrates that social smokers emerge empirically as a distinct class from smokers, even without accounting for tobacco use frequency or intensity. It also highlights that the social smoking class is sizable and identifies a group whose social smoking beliefs could be shifted with educational messaging.

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**POS3-49**

**ASSESSING REAL-WORLD EXPOSURE TO DIGITAL VIDEO ADVERTISING FROM A NATIONAL TOBACCO EDUCATION CAMPAIGN**

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Some health marketing campaigns have started to incorporate digital advertising into multimedia campaigns along with traditional media (e.g., television), but methods for measuring the reach of digital advertising are largely underdeveloped. Using market-level randomization of digital advertising from the 2014 Tips From Former Smokers (Tips) campaign, we compared rates of exposure between digital and television ads in 38 randomly chosen media markets. The ads featured graphic and emotional content on the effects of smoking, and were aired for the first time during this study and were not used in prior Tips campaigns to avoid potential confounding from latent ad exposure. Additionally, the ads were aired at equivalent doses of approximately 400 gross ratings points (GRPs) each to yield insights on the comparability between digital and television GRPs. We used data on a subgroup of cigarette smokers and nonsmokers from the 38 assigned markets from large, nationally representative surveys of cigarette smokers and nonsmokers to assess self-reported awareness of each ad by channel. Awareness rates for the format-specific ads were compared to assess the extent to which digital-only and television-only video formats for ads aired at similar GRP levels generate differential awareness rates. Among smokers, the “Brett” TV ad generated higher awareness rates (35.5%) than the “Rose” digital video ad (11.4%), inferring that at a given GRP level, TV yields approximately 3 times the reach of digital video. Nearly all smokers (98%) were aware of the “Rose” digital video ad claimed to have seen it on TV, indicating a high rate of screen “indifference.” Similar differences in ad awareness and recall of ads by screen type were observed between digital-only and television-only video formats for ads aired at similar GRP levels.

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POS3-50
IMPACT OF STANDARDISED PACKAGING RELATIVE TO A TOBACCO PRICE INCREASE: RESULTS OF TWO EXPERIMENTS
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BACKGROUND: Tobacco companies question whether standardized (or ‘plain’) packaging will change smokers’ behavior, leaving some policy makers unsure of the likely benefits. To create an analogy that illustrates these benefits, we estimated how standardized packaging compared to a proven tobacco control intervention, price increases through excise taxes. METHODS: An on-line study of 311 New Zealand smokers aged 18 and over asked respondents to complete two tasks: a willingness-to-pay task comparing a branded and a standardized pack at four different price levels, and a choice experiment that compared two levels of branding (standardized and plain), two warning themes (health and social), and four different prices. RESULTS: Respondents had significantly higher purchase likelihoods for the branded pack (with a 30% warning) than the standardized pack (with a 75% warning) at the two lower prices (p = 0.038; 0.018). A linear regression model estimated that respondents, on average, were willing to pay approximately 5 percent more for a branded pack. We analyzed the choice data using an aggregate Multinomial Logit Model that included branding level, warning theme, price and a branding*warning interaction, then developed estimates for each of the three Latent Class Model preference segments identified. We converted the parameter estimates of the Multinomial logit and Latent Class models into willingness to pay for the different non-price attributes. Overall, respondents were prepared to pay approximately 5 percent more for a branded pack; however the size of the premium varied between warning themes and by their demographic characteristics. CONCLUSIONS: Both experiments suggest that standardized packaging and larger warning labels could have a similar overall effect on adult New Zealand smokers as a five percent tobacco price increase. The findings extend support for standardized packaging as a key tobacco control. While earlier studies have focused primarily on reducing youth initiation, the additional evidence from our study suggests that this measure will also bring notable benefits to adult smokers (most of whom wish to quit).

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POS3-51
UNDERSTANDING THE SPATIAL RELATIONSHIP BETWEEN TOBACCO RETAILERS AND SCHOOLS
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Researchers examining the link between the availability of retail tobacco and youth tobacco use must begin to distinguish between the effects of 1) tobacco retailer density across the study area and 2) the immediate proximity of tobacco retailers to youth. The study’s primary aim was to examine the spatial relationship that exists between tobacco retailers and schools within six counties of West Virginia. Secondary aims were to 1) understand the relationship between tobacco retailer density and tobacco retailers’ proximity to schools and 2) examine how tobacco retailer characteristics vary across proximity-density groups. Retail tobacco availability for each school (N=33) was assessed using unweighted and weighted kernel density estimation approaches. Proximity from each tobacco retailer (N=276) to the nearest school was calculated utilizing street routes. Bivariate K-function tests assessed the spatial relationship between tobacco retailers and schools within each county. Chi-square tests assessed the independence between levels of tobacco retailer density and levels of tobacco retailers’ proximity to the nearest school. Three-way fixed effects ANOVA examined the effects and interactions between proximity-density groups, metropolitan status, and store types on various tobacco retailer characteristics. A significant (p<0.01) spatial interaction existed between tobacco retailers and schools in each county. A positive significant relationship (Chi-square=116.54, p<0.01) existed between levels of tobacco retailer density and tobacco retailer proximity to school levels. Amount of exterior tobacco marketing displayed at each tobacco retailer showed a significant (F(6, 254)=3.528, p< 0.01) two-way interaction between proximity-density groups and store types. While a significant (F(4,254)=5.593, p< 0.001) three-way interaction between proximity-density groups, metropolitan status, and store types existed for cigarette pack price. Findings suggest the need to contrast the inter-relationships between tobacco retailer density and proximity to schools within youth smoking studies. Targeted policies to restrict the availability of retail tobacco around schools are needed.

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POS3-52
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BACKGROUND: This presentation will: (1) Report on perceptions of the harmfulness of 8 tobacco products relative to cigarettes; (2) Identify characteristics of adult tobacco users related to perceptions that a particular product is less harmful than cigarettes; (3) Determine the relation between harmfulness perceptions and the likelihood of using a product; (4) Measure harmfulness perceptions of cigarettes and how these perceptions vary as a function of products used. METHODS: Data are from Wave 1 of the Population Assessment of Tobacco and Health (PATH) Study Adult Questionnaire, a nationally representative cohort study of adults and youth in the United States. Data for this paper are from the 32,920 adult survey conducted from September 2013 to December 2014. RESULTS: 79.3% of respondents believed that cigarettes are very/extremely harmful. The perceived harmfulness of non-cigarette tobacco products varied widely across products, although most respondents endorsed the idea that the harmfulness of these products were about the same as cigarettes. The greatest proportion of respondents believed that e-cigarettes (40.7%) are less harmful than cigarettes, followed by hookah (17.8%). Males and those less knowledgeable about the health risks of smoking were more likely to believe that non-cigarette products were less harmful than cigarettes. Perceptions of lower harmfulness were associated with a greater likelihood of regular use of that product. A higher proportion of respondents who said that cigarettes were very/extremely harmful used e-cigarettes, hookah, snus, or smokeless tobacco. CONCLUSIONS: Product harmfulness perceptions varied widely across different types of non-cigarette tobacco products. Future longitudinal research would be helpful to understand whether perceptions of harmfulness predict subsequent product use.

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POS3-53
CO-OCCURRENCE OF TOBACCO USE, SUBSTANCE USE, AND SYMPTOMS OF MENTAL HEALTH PROBLEMS AMONG YOUTH: FINDINGS FROM WAVE 1 OF THE POPULATION ASSESSMENT OF TOBACCO AND HEALTH (PATH) STUDY

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BACKGROUND: Youth cigarette use has declined in the U.S., yet those who continue to smoke are more likely to exhibit substance use and mental health problems. It is not clear if these associations exist for non-cigarette tobacco products.

METHODS: The co-occurrence of tobacco use with substance use and symptoms of mental health problems was examined among 13,651 12-17 year olds from Wave 1 of the Population Assessment of Tobacco and Health (PATH) Study. The PATH Study is a nationally-representative longitudinal study of tobacco use and health in the U.S. Wave 1 included self-reported lifetime use of cigarettes, e-cigarettes, traditional cigars, cigarillos, filtered cigars, pipe, hookah, snus pouches, other smokeless tobacco, disposable tobacco, bidis and kreteks; lifetime use of alcohol, marijuana, and other drugs; and lifetime symptoms of substance use, internalizing (mood and anxiety), and externalizing (opposition and aggressive behavior) problems. The association with externalizing symptoms was assessed using the Global Appraisal of Individual Needs-Short Screener (GAIN-SS).

RESULTS: Tobacco users were more likely to report lifetime alcohol or drug use compared to non-users (75% vs. 19%), particularly cigarillo (92% vs. 26%) and filtered cigar (92% vs. 30%) users. In multivariable ordered logistic regression analyses, use of each tobacco product was associated with higher severity levels of substance use problems, particularly for cigarillo (odds ratio (OR) = 14.0, 95% confidence interval (CI): 11.7-16.7) and cigarette (OR=12.3, 95% CI: 10.6-14.3) users. Moreover, tobacco users were nearly 1.5 times more likely to have higher severity levels of both internalizing (95% CI: 1.3-1.6) and externalizing (95% CI: 1.3-1.6) problem symptoms compared to non-users. In product-specific analyses, the strongest associations were for filtered cigar users (OR=1.8, 95% CI: 1.3-2.4 for internalizing problem symptoms and OR=1.8, 95% CI: 1.3-2.4 for externalizing problem symptoms)

CONCLUSIONS: Our findings highlight the high co-occurrence of tobacco use with both internalizing and externalizing problems, particularly for cigarillo (odds ratio (OR) = 14.0, 95% confidence interval (CI): 11.7-16.7) and cigarette (OR=12.3, 95% CI: 10.6-14.3) users. Moreover, tobacco users were nearly 1.5 times more likely to have higher severity levels of both internalizing (95% CI: 1.3-1.6) and externalizing (95% CI: 1.3-1.6) problem symptoms compared to non-users. In product-specific analyses, the strongest associations were for filtered cigar users (OR=1.8, 95% CI: 1.3-2.4 for internalizing problem symptoms and OR=1.8, 95% CI: 1.3-2.4 for externalizing problem symptoms).

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POS3-54
A QUALITATIVE ANALYSIS OF SMOKEFREE MESSAGES TARGETING LGBA SMOKERS

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BACKGROUND: Tobacco companies have promoted smoking as a right akin to freedom of expression regarding sexual orientation, and targeted tobacco brands to people who identify as LGBA. Although New Zealand’s smokefree 2025 goal requires massive reductions in smoking prevalence, no specific campaigns have reached out to LGBA communities. We explored how smokers and recent quitters who identify as LGBA interpreted and responded to tailored cessation messages.

METHODS: We conducted 16 in-depth interviews with young adults aged between 20 and 30 years old who were daily, intermittent, or recently quit smokers, and who identified as gay, lesbian, bisexual, or asexual. We explored participants’ responses to 17 potential smokefree messages and then used a grounded thematic analysis approach to interpret their transcripts. RESULTS: We identified three key themes: community cohesion; industry rejection, and empowerment. Participants who self-identified as being strongly involved in the LGBA community valued messages that showed their community fighting the health threat posed by smoking. They saw these messages as more legitimate and more likely to be effective than those coming from external agencies. A message illustrating “Project SCUM”, an industry strategy to target LGBA people, elicited strong feelings of disgust and rejection, and suggests industry denormalisation messages could support cessation. Participants also regarded images illustrating cessation as a demonstration of assertion and empowerment as effective, and suggested a “Project Reclaim” as an opportunity to reject the harm smoking causes to their communities.

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POS3-55
CAN A SMARTPHONE GAME FOR TOBACCO ADDICTION BE USED FOR SMOKING CESSATION IN AN AMERICAN SETTING?

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BACKGROUND: Over 400 smoking cessation apps are currently available, however most are not developed in collaboration with public health practitioners or users and few incorporate validated behaviour change techniques. ‘Gamification’ is effective in promoting healthy behaviour and delivering health promotion advice; however, there are no dedicated smartphone games for smoking cessation. We have used gamification techniques to develop a smoking cessation game implementing validated behaviour change methods. The app has been developed iteratively and collaboratively in the UK with public health practitioners, game designers, health psychologists and sixty smokers invited through eight patient participation groups to try the game. AIMS: To conduct patient participation groups in the US to determine if our app can be adapted to suit US smokers as an effective means of delivering smoking cessation advice.

METHODS: Thirteen smokers attended two patient participation groups to try the game in Chapel Hill, North Carolina through the University of North Carolina’s Tobacco Prevention and Evaluation Program. Qualitative analysis of the feedback used a framework approach. RESULTS: Players found the app to be an engaging and motivating way to deliver smoking cessation advice, and provide helpful distraction from smoking. Over 92% of the participants would play the app again and recommend to a friend. Emergent themes such as: more focus on health benefits and personalization has led to further development. Players would be happy to obtain this app from their Doctor or smoking cessation program. CONCLUSIONS: A dedicated game to promote smoking cessation has potential to distract smokers during cravings and deliver smoking cessation advice both in the UK and US, widening the available platform audience. Iterative collaborative development has ensured the game is engaging as well as effective. Large-scale uptake of this app could have an enormous Public Health impact. We plan to conduct a randomized controlled trial in the UK against clinical outcomes.

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POS3-56
ANALYSIS OF U.S. NEWSPAPER COVERAGE OF TOBACCO CONTROL POLICIES AFFECTING THE RETAIL ENVIRONMENT, 2007-2014

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BACKGROUND: Tobacco control policies affecting the point of sale (POS) are an emerging tobacco control priority. Given the media agenda's influence on public and policymaker opinion, monitoring news content is an important step in the policy change process. PURPOSE: This is the first study to describe coverage of POS tobacco control efforts in US national and state-level newspapers: article volume; policy domains and options, frames, sources, and slant present. METH- ODS: High circulation state (k=268) and national (k=5) newspapers comprised the sampling frame. Boolean search terms were used to retrieve POS-focused articles published in sampled newspapers, from 01/01/2007 to 12/31/2014, from America’s News and ProQuest databases. Five raters followed a structured inclusion
screening and coding protocol; 10% of articles were double coded to measure inter-rater reliability (IRR). RESULTS: 917 articles were included; mean Cohen’s Kappa (IRR) was 0.74. Mean POS coverage was 9.5 articles/month (range 0-130) yet peaked in February 2014 when CVS pharmacies announced a decision to stop selling tobacco (n=130) and in June 2009 when the Family Smoking Prevention and Tobacco Control Act (FSPTCA) was passed (n=79). POS policy domains covered were tobacco retailer licensing (49.1% of articles), which included the pharmacy sales restriction; federal regulation (e.g., FSPTCA) (26.3%); flavor bans (14.4%); POS health warnings (9.7%); advertising (6.6%); minimum legal sales age (7.7%); product placement (7.3%); and non-tax approaches to raising price (5.6%). The most common frame present was regulation (71.3%). Tobacco retailers were the most frequent source (39.8%). Half of articles (51.3%) had a mixed, neutral or anti-tobacco control slant. CONCLUSIONS: POS-stories covered federal regulation, voluntarily sales bans in pharmacies and grocery stores, and novel local-level policies (e.g. Sensible Tobacco Enforcement in New York City). Significant presence of the regulation frame and use of tobacco retailers as sources are unique from past non-POS tobacco coverage; as such, future research should test relationships between frame and source presence and policy implementation success.

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POS3-57
COULD ANNOUNCING A BAN ON TOBACCO USE ON CAMPUS REDUCE STUDENTS’ PERCEIVED ORGANIZATIONAL SUPPORT FROM THE UNIVERSITY?

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INTRODUCTION: A tobacco-free policy may be perceived differently depending on how it is described and what support is offered for quitting. Previous research has shown that offering assistance for quitting smoking moderates perceived organizational attraction when communicating a workplace tobacco-free policy to potential employees. We sought to examine how different ways of describing a new tobacco-free campus policy would impact college students’ perceived level of support from the college or university. METHODS: We used an online survey experiment, randomizing 1,790 undergraduate students (response rate: 76%) in a required course to a control condition and two conditions. One condition displayed an announcement of a tobacco-free campus policy with a supportive frame (emphasis on promoting health and offering for help) and the other a punitive frame (emphasis on consequences for violating the policy). We measured perceived organizational support using items previously shown to be relevant for college students (alpha = 0.90). Given significant non-normality in the dependent variable, we used a non-parametric Kruskal-Wallis test to examine differences in perceived organizational support across the three conditions. We assessed smoking status and support for tobacco-free campus policies. RESULTS: Contrary to previous research that found differences in organizational attraction by how tobacco-free policies were described, we found no difference in perceived organizational support among current undergraduate students exposed to different tobacco-free campus policy announcements (p=0.69). We found the same pattern of non-significant results across smoking statuses, but just 6% of participants smoked 15+ days in the last month. Support for tobacco-free policy was high: 69% of survey respondents believed a tobacco-free policy would have somewhat or extremely positive impact on student quality of life. DISCUSSION: In this pilot study, exposure even to a punitive tobacco-free campus policy announcement did not decrease perceived university organizational support. Future work should incorporate a larger sample of smokers and investigate differences from previous findings.

Funding: No Funding.

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POS3-58
SEXUAL IDENTITY AND AWARENESS OF A NATIONAL ANTI-TOBACCO CAMPAIGN

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BACKGROUND: There is very little research on the impact of youth smoking prevention campaigns among LGBTQO youth, despite the fact that LGBTQO youth and young adults are more likely to smoke than their heterosexual counterparts. In 2014, truth®, one of the largest national branded youth smoking prevention campaigns launched a new campaign focused on changing social norms around youth smoking. PURPOSE: The purpose of these analyses were two-fold: (a) to examine brand awareness, ad awareness, and talking with family/friends about ads among LGBTQO youth compared with heterosexual youth and (b) to compare results across two national samples. METHODS: Using cross-sectional data from two truth® focused samples: (a) a national sample of youth aged 15 to 21 (Heterosexual: n = 7,965; LGBTQO = 569) and (b) a continuous media monitoring dataset of youth aged 15 to 21 (Heterosexual: n = 3,790; LGBTQO = 1,341), patterns of awareness and talking to others were examined among those who self-identified as heterosexual and those who self-identified as LGBTQO. We used OLS and logistic regression models to understand differences. RESULTS: No differences existed between these groups on brand awareness, ad awareness, or talking with family/friends about the advertisements. These findings were consistent across the two different national samples. CONCLUSIONS: Although LGBTQO youth do not differ from heterosexual youth on multiple measures of brand and ad impact of a national youth smoking prevention campaign, these findings are still positive. This suggests that LGBTQO youth are just as aware of this campaign and talking with others about it similar to their heterosexual counterparts—this campaign is reaching LGBTQO young adults. It is still important, however, to understand how receptive LGBTQO youth are to these types of anti-smoking ads. Future analyses will look at ad and brand receptivity for LGBTQO youth so we can understand the types of messages that resonate with this important population.

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POS3-59
TESTING ANTI-TOBACCO MEDIA MESSAGES: HOW PREDICTIVE IS PRE-MARKET DATA FOR IN-MARKET EFFECTIVENESS?

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Testing anti-smoking media messages can provide critical feedback related to audience receptivity and effectiveness both prior to airing the messages (pre-market testing) and once the messages are being aired (in-market testing). The purpose of this study is to determine whether pre-market data related to ad receptivity and agreement with key message themes is consistent with in-market testing results. Quantitative pre-market data was collected from an online panel sample using a forced exposure method for three truth ads: Anthem (N=311), Unpaid (N=305), and Response (N=322). In-market data was obtained from a continuous online media tracking survey which collects 140 interviews per week. Six weeks of data were included to capture the campaign period (N = 305 Anthem; N = 229 Unpaid; N= 176 Response). Receptivity, defined as “this ad captured my attention,” and campaign specific outcomes, including joining a movement “I would be part of a movement to end smoking” and anti-industry sentiment “tobacco companies make me angry” were examined. There were no statistically significant differences in agreement with campaign messages between pre- and in-market. There was an increase in receptivity for Unpaid from pre- to in-market (57.7% -68.6%; p<0.05). Results demonstrate that there were no statistically significant differences in agreement with campaign messages between pre- and in-market (55.1% vs. 52.6% joining a movement; 49.9% vs. 43.7% anti-industry). Pre-market testing can be used to predict how an audience will receive ads and understand key messages. Increases in receptivity of Unpaid indicate that optimizations made to the ad as
a result of pre-market testing increased ad success. Lack of significant differences in receptivity and agreement with key messages suggest that pre-market testing is an effective tool for predicting ad performance. Media campaigns should consider testing ads pre-market as an indicator of how an ad will perform and to provide an opportunity for optimizations.

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POS3-61
LESSONS LEARNED FROM A SPANISH SMOKING CESSATION WEBSITE

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Smoking remains a major global health burden. Rates of tobacco use are particularly high in countries or regions with a limited capacity to provide smoking cessation services. It is therefore imperative that researchers develop accessible smoking cessation programming. Moreover, in order to be effective, programming must resonate with the specific characteristics and interests of the target audience.

One of the principal objectives of the Smokefree.gov initiative (SGI) is to provide open digital resources, capable of reaching large, potentially underserved audiences with tailored tobacco cessation materials. To this end, the SGI team has developed several resources aimed at reaching a Spanish speaking population – including a Spanish language smoking cessation website, as well as a mobile text messaging service. Although initially intended to target Hispanic Americans, the data shows that website materials are in fact reaching a much broader, and largely international, population. The SmokefreeEspanol site is most often viewed by individuals from Spain (29.84% of total page views), followed by Mexico (18.64%), Argentina (12.94%) and the United States (12.22%). While reasons for this are not conclusive, it is likely that individuals utilize SGI materials due to a dearth of programming within their own country, or simply because the SGI site is so highly visible and easily accessible online. While it is interesting to see where SGI viewers are from, it is perhaps more important to identify what information these viewers are accessing, in order to provide content tailored to their needs.

Website data shows that certain topics, such as cessation for light or intermittent smokers, are more heavily trafficked by the SmokefreeEspanol demographic – corroborating studies that have shown that a higher percentage of Spanish-speaking Latino smokers often smoke irregularly. Understanding users and use patterns of SGI materials is essential to creating more effective interventions. Moreover, the SmokefreeEspanol website highlights the importance of digital smoking cessation services, which are unheeded by geographical bounds.

Funding: National Cancer Institute

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POS3-62
PLAIN PACKAGING IMPLEMENTATION: PERCEPTIONS OF RISK AND PRESTIGE OF CIGARETTE BRANDS AMONG ABORIGINAL AND TORRES STRAIT ISLANDER PEOPLE

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OBJECTIVES: To assess the impact of the introduction of plain packaging with larger graphic health warnings on perceptions of risk and prestige related to different cigarette brands, among Aboriginal and Torres Strait Islander people in the Australian Capital Territory. We hypothesised that the changes would decrease perceptions that ‘some cigarette brands are more prestigious than others’, and that ‘some brands are more prestigious than others’, and this would be stronger among participants aged 35 years and under, and among smokers when compared with non-smokers.

METHODS: Aboriginal and Torres Strait Islander people aged 12 years and over completed the baseline survey prior to packaging changes, and were followed up 12 months later (N=98). Repeated measures ANCOVAs assessed perception changes. RESULTS: Following the introduction of plain packaging, there was a reduction in Aboriginal and Torres Strait Islander participants who reported the incorrect perception that ‘some cigarette brands are more harmful than others’ (F(1,84)=4.75, p<0.05). We found an interaction with age for changes in the perception of prestige (F(1,87)=5.69, p<0.05); indicating that reductions prestige were limited to those aged 35 years or younger. We found no significant interactions between smoking status and packaging changes.

CONCLUSIONS: Mistaken perceptions about differential levels of harm of different brands of cigarettes are still relatively common in many countries. Following Australia’s 2012 policy of PP and larger pictorial health warnings on cigarette and tobacco packs, there was a significant reduction in the number of Aboriginal and Torres Strait Islander people reporting the incorrect perception that ‘some cigarette brands are more harmful than others’. These results provide support for regulatory measures to prohibit the use of misleading package imagery in product marketing, as prescribed in Articles 11, 12 and 13 of the Framework Convention on Tobacco Control among high smoking prevalence groups, such as the Aboriginal and Torres Strait Islander population of Australia.

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POS3-63
ELECTRONIC CIGARETTE ADVERTISING: DATA ON ADVERTISING EXPENDITURES OVER TIME

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Electronic cigarettes (e-cigarettes) are currently advertised and sold in the US with few restrictions. Since 2011, e-cigarette advertising has increased across mainstream media channels and several major tobacco companies, including Altria, Imperial Tobacco and RJ Reynolds, have entered the e-cigarette market. This study addresses a gap in the literature by providing surveillance data on e-cigarette advertising over a two-year period. A full-service advertising firm, Competitrak, was used to collect all e-cigarette advertising on TV, online display and video, print and radio in the US between January 1, 2013 and December 31, 2014. Advertising expenditures and associated meta-data were summarized. E-cigarette advertising expenditures in 2013 were $58.1 million and included a total of 143 unique ads. Eighty-eight percent of all spending was on print and television media. Overall e-cigarette advertising spending in 2014 increased by 52%, reaching $88.1 million for 298 unique advertisements. Print and television comprised 94% of all yearly spending. The top spending brands in 2013 were Blu ($37.2 million), NJOY ($11.1 million), Fin ($3.0 million), Mistic ($1.9 million) and Logic ($1.9 million). In 2014, the top spending brands included the newcomer MarkTen ($35.3 million), Blu ($30.1 million), NJOY ($10.4 million), the new brand Vuse ($7.8 million) and Logic ($1.2 million). Altria’s MarkTen and Imperial’s Blu, two of the highest spending brands, have been featured in over 25 consumer magazines with high youth and young adult readership, such as Rolling Stone, Ebony, and Sports illustrated. RJ Reynolds’ Vuse has advertised their product largely through television. Electronic cigarette advertising expenditures significantly increased from 2013 to 2014, largely due to the introduction of new tobacco industry-owned brands. Given the dominance of major tobacco companies in this emerging industry and rising e-cigarette prevalence rates among youth, advertising surveillance is essential to inform research and regulations on e-cigarette marketing to youth.

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POs3-64
OLDER YOUNG ADULTS AS A SECONDARY AUDIENCE FOR THE TRUTH CAMPAIGN
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The truth campaign is a national smoking prevention counter-marketing campaign for youth and young adults. The original truth audience was 12-17 years old in 2000 and the campaign was also found to have an impact on 18-24 year olds. The campaign re-launched a mass media campaign in 2014 with a slightly older target of 15-21 year olds, given that almost 99% of adult smokers started by the age of 26. The purpose of this study was to understand brand awareness over time defined as truth logo awareness and to determine correlates of ad awareness among 18-34 year olds. For the assessment of brand awareness, this study utilized weighted data from participants completing Waves 1, 5, 7, and 8 (4 years) of the Truth Initiative Young Adult Cohort Study (The Truth). Data from Waves 7-8 were used to assess correlates of ad awareness (N=2,715). Brand awareness increased from 50% in Wave 1 to 59% in Wave 8 (p<0.001), following the re-launch of the national truth campaign. After the launch, among those who recognized the truth logo, 81% confirmed their awareness by correctly identifying the brand as anti-tobacco. Binary logistic regression analyses generated prevalence estimates of ad awareness by demographics and multivariable logistic regressions were used to understand correlates of ad awareness. Two ads were included in the post-launch analysis (Waves 7-8). 26% of the respondents in Waves 7 and 8 were aware of at least one ad (awareness was 32% for 18-24 and 23% for 25-34) and were more likely to be younger (AOR=1.61; 18-24 vs. 25-34). Black (AOR=2.04; vs. White), and lower annual income (less than $25,000, AOR=1.58 and $25,000-$49,999, AOR 1.50 compared to at least $50,000: AOR=1.50). Those who viewed TV/on-line video/ streaming video at least once a day were significantly more likely to have seen an ad (AOR=1.51). Findings from this study indicate that, similar to the 2000 campaign, the current campaign is reaching the intended younger audience as well as this slightly older young adult population. Future research will examine the impact of brand and ad awareness on tobacco use behaviors in this important age group.

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POs3-65
USING CELEBRITIES IN SOCIAL MEDIA MARKETING: EVALUATING RESPONSES TO TRUTH® 'LEFTSWIPEDAT' AND 'UNPAID SPOKESPERSON' ADS ON TWITTER
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INTRODUCTION: The use of celebrities in traditional advertising is an established practice, yet the rise in social media has led to new ways of using celebrities for endorsements. Little is known about its subsequent social response. The Fall 2014 truth® campaign targeted celebrities as ‘unpaid spokespersons’ for tobacco companies, while the Spring 2015 campaign featured musicians and internet personalities in LeftSwipeDat®. The campaign has used aggressive social media strategy to supplement traditional advertising to engage youth. Previous research has shown that social media can both amplify exposure to campaign messages, and provide insights on message acceptance and interpretation. This study presents an analysis of the tweets related to the Fall 2014 and Spring 2015 truth® campaigns. The primary objective was to evaluate the use of, and sentiment toward, celebrities in social media campaigns. METHODS: Data were obtained from the Twitter Firehose, via Grips’ Historic Powertrack. Tweets were collected using a list of 90 search rules related to the campaign and its content. These analyses only used tweets relevant to ads featuring celebrities and were coded for sentiment (positive, negative or neutral) toward truth campaign messages. RESULTS: The Fall 2014 ‘Unpaid Spokesperson’ ads generated 11,939 tweets. Of those, 22% were classified as positive, 45% as negative and 33% as neutral. The Spring 2015 LeftSwipeDat® video produced 93,554 tweets. Of those, 57% were classified as positive, 26% were negative and 17% were neutral. DISCUSSION: The ‘Unpaid Spokesperson’ ad elicited primarily negative actions. Many tweets came from fans in defense of a celebrity, yet still increased the conversation about smoking among the target audience. The ‘LeftSwipeDat® ad generated an overwhelmingly positive Twitter response. CONCLUSION: The use of celebrities in campaigns using social media can be effective in generating additional campaign exposure, as well as informative online social conversation. Both positive and negative portrayals of celebrity figures can be used to amplify the social conversation.

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POs3-66
SMOKING SELVES: USING INSTAGRAM TO EXAMINE SMOKING BEHAVIOR
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INTRODUCTION: Social media has fundamentally changed the way that we engage with health-related information. Increasingly, researchers turn to platforms like Twitter for public health surveillance from flu prediction to disease behavior patterns. However, our media landscape is constantly evolving. In 2015, Instagram is one of the fastest growing social networks, with over 52% of young adults (18-29) using the platform compared to just 33% for Twitter. METHODS: This first-of-its-kind study will content code a sample of smoking imagery on Instagram. Data were obtained from Instagram’s public API. Over a twelve-month period from August 2014 – July 2015, 18 popular tobacco and e-cigarette related text tags were used to collect 2.3 million image posts. Approximately, 8000 images were coded by undergraduate students who met high intercoder reliability (.91). Content codes included type of artifact, branding, person number, gender, age, ethnicity, and the presence of smoke. RESULTS: Images of cigarettes were the most popular at 49%, followed by e-cigarettes (32.1%), cigars (3.6%) and hookah (2.4%). More than 40% of images contained branded content. Smoking selfies was the dominant form of portrait expression with 61.4% of images containing only one person when compared to 34.5% of images that did not contain a person. In images with persons, 41.7% contained females compared to only 18.5% for males; and over 52% of images contained whites compared to only 3% for African Americans. Over 60% of images contained images of smoke or vape clouds. CONCLUSIONS: Instagram can be a powerful tool for the surveillance of smoking behavior and social norms among young adults. The popularity of these images may counteract public health efforts to de-normalize smoking. Smoking behavior is being renormalized through social media where smoking selfies and images of tobacco products are easily seen and shared. Further, the sharing of brand images allows tobacco companies covert and unpaid advertising on increasingly popular image-based platforms like Instagram and Tumblr.

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POs3-67
THE ADDITIVE IMPACT OF TIPS AND FREE STATE-BASED NRT TO MAXIMIZE STATE QUITLINE CALL VOLUME
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INTRODUCTION: The CDC sponsored “Tips from Former Smokers” paid federal media campaign has resulted in significant increases in Quitline call volume in many states. Prior to Tips, many states had well-documented success increasing Quitline call volume by promoting free NRT via low or no-cost methods. Combining state-based free NRT promotion in conjunction with Tips may be an effective strategy to maximize campaign impact. We present findings from North Carolina, where the Tobacco Prevention and Control Branch (TPCB) used no-cost methods (i.e., press release and emails to TPCB partner listservs) to promote eight weeks of free NRT during two distinct periods coinciding with the Tips campaign. METHODS: QuitlineNC intake data, collected by Quitline vendor Alere Wellbeing, was analyzed to assess call volume for all tobacco users who registered for coaching services during a four week period following the 2013 promotion and the 10 day
period of the 2015 promotion. T-tests were used to compare differences in average call volume before and during the two promotions. RESULTS: In 2013, call volume was 44% higher in the four weeks following the free NRT press release compared to the preceding four weeks. Calls during these four weeks accounted for 30.5% of overall call volume during the 16 week Tips campaign. In 2015, call volume during the 10 day promotional period was 210% higher than the preceding 10 days, accounting for 22.4% of call volume during the 17 weeks of the Tips campaign for which data are available. The increase in call volume from the time period preceding the promotion to the promotional period were statistically significant in both 2013 (p=.03) and 2015 (p<.01). DISCUSSION: QuitlineNC call volume increased dramatically following the two free NRT promotions held during Tips campaigns. Call volume following each NRT promotion period accounted for significantly higher percentages of total call volume during the duration of each Tips campaign compared to periods of the same length during the remainder of the campaign, suggesting that the NRT promotion impacted call volume beyond the expected impact of Tips. The additive impact of these promotions was critical to QuitlineNC achieving high annual call volumes, despite reduced state Funding and a ban on paid statewide media. North Carolina’s success in promoting free NRT during the Tips campaign offers a model for other state quitlines seeking to maximize limited resources, leverage the impact of Tips and other federal campaigns, and increase Quitline utilization.

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POS3-68
IDENTIFYING WAYS TO BOLSTER SUPPORT FOR ANTI-SMOKING CAMPAIGNS FOR VULNERABLE POPULATIONS

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INTRODUCTION. The tobacco industry targets its marketing to subpopulations such as racial/ethnic minorities, youth, and gays, lesbians, and bisexuals (GLBs). We examined how members and non-members of these subpopulations responded to statements about marketing practices and the impact of these statements on support for anti-smoking campaigns. METHODS. A nationally representative telephone sample of 5,014 adults (ages ≥18) and 1,125 adolescents (13-17) and an online convenience sample of 4,137 adults (≥18) participated in a 3X4X2 between-subjects experiment. Participants received a statement about industry advertising practices that varied in specificity (no statement, general statement about industry targeting, or a statement specific to a subpopulation). The subpopulations, or “prevention target groups,” were teens, GLBs, African Americans, and Latinos. Participants were either members or non-members of their prevention target group. We asked about their level of support for anti-smoking campaigns designed for one of those four prevention targets. We used ANOVA to examine the effects of the specificity of the industry advertising statement, the prevention target, and group membership on support for anti-smoking campaigns. RESULTS. Support for anti-smoking campaigns varied by prevention target group (p<.05). Post-hoc tests showed that support was highest for teens, followed by Latinos and African Americans (equivalent), and then GLBs. Group members expressed higher levels of support than non-members for Latinos, African Americans, and GLBs (all p<.05), but there was a non-significant trend in the opposite direction for teens. The stated specificity of industry marketing practices did not have an effect. Results were similar in the phone and Internet surveys. CONCLUSIONS. Our findings suggest that campaigns intended to increase support for anti-smoking efforts for racial, ethnic, and sexual minorities may benefit from specifying their target population. Further, the collective force of group members could be harnessed to build grassroots support for such campaigns. However, briefly mentioning industry marketing practices does not appear to bolster support.

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POS3-69
DELIVERING PERSONALIZED ON-DEMAND CESSION CONTENT: THE MYSMOKEFREE DASHBOARD EXPERIENCE

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One of the more recent, cost-effective, and active means of reaching smokers with cessation support has been through digital outlets. The National Cancer Institute’s (NCI) Smokefree initiative provides smoking cessation services across four websites, multiple SmokefreeTXT text message smoking cessation programs, 10 social media accounts, and two mobile applications. However, Smokefree has grappled with the best strategies for integrating and personalizing these varied programs for users. Studies have shown that personalized content performs significantly better than non-personalized content in web-based cessation interventions. In an effort to increase personalization and decrease user burden, the National Cancer Institute developed a personal web Dashboard (MySmokefree) for the Smokefree.gov website. MySmokefree allows users to personalize their Smokefree experience via a web-based output of content recommendations based on a series of brief, low-burden, and user-driven filters such as sex, age, language preference, and stage in the smoking cessation journey. Output content encompasses the entire Smokefree suite of resources, including websites, apps, SmokefreeTXT programs, and social media accounts. Users can interact with this content, including visiting specific website pages, signing up for SmokefreeTXT programs, downloading apps, and interacting with social media accounts, from a single location. Structuring MySmokefree in this manner allows users to immediately access personalized content without logging in or signing-up, which can be an impediment to use. The personalized output will be generated using a meta-tagging structure of all Smokefree content, ensuring that only the most relevant results are returned. The impact of MySmokefree on use and engagement within MySmokefree and across the individual Smokefree resources will be discussed.

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POS3-70
ENGAGING SMOKERS TO IMPROVE SMOKING CESSATION OUTCOMES: QUIT AND STAY QUIT MONDAY

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Analysis of Google search queries identified that smoking cessation searches peak early in the week, suggesting increased interest or motivation at the start of the week. We conducted a pilot of the “Quit and Stay Quit Monday” (QSQM) smoking cessation and engagement program to assess whether smokers who receive messaging to quit or recommit to quitting on Mondays are more successful in their quit attempts. We partnered with existing smoking cessation classes to conduct a quasi-experimental, pretest-posttest pilot study with two nonequivalent groups. The comparison and intervention groups received the same curriculum, but the intervention group was enhanced with Monday messaging. The Monday intervention class consisted of a Monday “tip of the week,” a Monday quit buddy, and encouragement for participants to quit or recommit to quitting on Mondays. A Monday-framed text message program was also made available to participants. Outcomes were assessed at the final class and 3 months post-intervention. Instructors reported that the QSQM theme is a useful tool for encouraging smokers in their quit attempts. Preliminary data for 68 participants reveal that more individuals in the Monday group compared to the standard group achieve 7-day and 30-day point prevalence abstinence at follow-up. Of 49 participants who completed follow-up at their final class, 4 of the 5 individuals who had not smoked in the past 7 days were in the Monday condition and of the 3 who had not smoked in the past 30 days, 2 were in the Monday group. Of 28 participants who completed follow-up 3 months after the conclusion of the intervention, 7 of the 9 participants who had not smoked in the past 7 days were in the Monday group as were 7 of the 8 participants who had not smoked in the past 30 days. The number of quitters in the pilot study to date is low, thus these differences were not statistically significant. Monday messaging is promising as a novel approach to smoking cessation. A larger sample is needed to assess with greater clarity the effect of Monday messaging on abstinence and additional outcomes including self-efficacy, quit length, and time from relapse to next quit attempt.
adjusting for all confounders and 2) whether this association is mediated through use. We tested 1) the association between ad exposure and e-cigarette intentions any time in the next six months (7.5%), and several confounders associated with ing perceptions of harm and normative beliefs), intentions to try e-cigarettes at 214
promoting e-cigarettes in the past month, their beliefs about e-cigarettes (including "The Real Cost" TV advertisements and smoking-related beliefs targeted by of "The Real Cost" TV ads in the past 30 days (0-100 times), their targeted and non-targeted smoking-related beliefs, intentions to smoke in the next 6 months, and a range of predictors of youth smoking. We separately regressed each targeted and non-targeted belief on exposure to the ads. These results are presented in Table 2. Overall, the relationship between ad recall and comparable beliefs not targeted by those ads in a nationally representative sample of adolescent nonsmokers. This is the first study of the effectiveness of the campaign and the first to show discriminating effects of ad campaigns on targeted (rather than non-targeted) smoking-related beliefs.

METHODS: The data come from a nationally representative, ongoing prospective observational study, collected continuously from June 2014 through July 2015. Analyses were limited to the target group: non-smoking 13-17 year olds (n=2012). Youth reported how often they were exposed to each of four Real Cost TV ads in the past 30 days (0-100 times), their targeted and non-targeted smoking-related beliefs, intentions to smoke in the next 6 months, and a range of predictors of youth smoking. We separately regressed each targeted and non-targeted belief on exposure to the ads. These results are presented in Table 2. Overall, the relationship between ad recall and comparable beliefs not targeted by those ads in a nationally representative sample of adolescent nonsmokers. This is the first study of the effectiveness of the campaign and the first to show discriminating effects of ad campaigns on targeted (rather than non-targeted) smoking-related beliefs.

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POS3-71
EXPOSURE TO “REAL COST” TV ADS IS SPECIFICALLY ASSOCIATED WITH CAMPAIGN-TARGETED BELIEFS
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BACKGROUND: The US Food & Drug Administration launched their first national youth smoking prevention campaign in February 2014. In order to assess the effectiveness of the campaign, this study examines the relationship between recall of “The Real Cost” TV advertisements and smoking-related beliefs targeted by those ads (targeted) versus beliefs not targeted by the ads (non-targeted). Campaign developers create messages targeting addiction and the cosmetic effects of smoking as recommended by formative research with the target population. METHODS: The data come from a nationally representative, ongoing prospective observational study, collected continuously from June 2014 through July 2015. Analyses were limited to the target group: non-smoking 13-17 year olds (n=2012). Youth reported how often they were exposed to each of four Real Cost TV ads in the past 30 days (0-100 times), their targeted and non-targeted smoking-related beliefs, intentions to smoke in the next 6 months, and a range of predictors of youth smoking. We separately regressed each targeted and non-targeted belief on exposure to the ads. These results are presented in Table 2. Overall, the relationship between ad recall and comparable beliefs not targeted by those ads in a nationally representative sample of adolescent nonsmokers. This is the first study of the effectiveness of the campaign and the first to show discriminating effects of ad campaigns on targeted (rather than non-targeted) smoking-related beliefs.

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POS3-72
E-CIGARETTE MARKETING AND YOUTH INTENTIONS TO USE E-CIGARETTES AMONG YOUTH LEAST SUSCEPTIBLE TO TOBACCO
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BACKGROUND: Although researchers debate whether e-cigarettes are improving public health, most agree that it is undesirable for youth who would not have otherwise used tobacco to use this product. There are no restrictions in the U.S. on where e-cigarettes can be advertised. Farrelly and colleagues (2015) showed experimentally that e-cigarette ad exposure leads to a greater likelihood of future use among U.S. adolescents who had never used e-cigarettes. However to date there have been no reports of population-level evidence connecting real-world e-cigarette ad exposure to e-cigarette use among youth least susceptible to tobacco. METHODS: We are conducting an ongoing nationally representative phone survey of 13-17 year olds (begun June 2014). We limited our analytic sample to those least susceptible to tobacco (i.e. never tobacco users). We recruited participants using random digit dialing and asked them about: 1) their exposure to e-cigarette ads in the past 30 days (0-100 times), their targeted and non-targeted smoking-related beliefs, intentions to try e-cigarettes at any time in the next six months (7.5%), and several confounders associated with use. We tested 1) the association between ad exposure and e-cigarette intentions (adjusting for all confounders and 2) whether this association is mediated through e-cigarette beliefs. RESULTS: More than half of them had seen at least one e-cig

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POS3-73
TOBACCO 101: THE DEVELOPMENT AND PILOT OF AN ONLINE TOBACCO PREVENTION CURRICULUM FOR COLLEGE STUDENTS
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BACKGROUND: Despite promising declines in cigarette and smokeless tobacco use in the past decade, 24% of young adults aged 18-24 are current tobacco users, and the popularity of products such as hookah and e-cigarettes is rising. Tobacco use is often initiated and solidified during young adulthood, yet the majority of intervention efforts in this age group focus on cessation rather than prevention. The goal of this study was to develop and test an online curriculum for the prevention of tobacco use in college students. METHODS: A pilot study of "Tobacco 101" was conducted in April 2015 across 14 Texas colleges. The web-based curricula consisted of four modules focused on the health consequences of tobacco and e-cigarette use, tobacco marketing, and strategies for resisting peer influence. Each module presented as an animated video hosted by two college-aged characters. A pre and post survey were administered to evaluate knowledge and perceptions of tobacco product harms, perceptions of peer use, self-efficacy in refusing tobacco, and intentions to use in the next year. RESULTS: A total of 313 students completed some portion of the curriculum, and 147 students completed all four modules. Overall response to the curriculum was positive, with the majority of students agreeing that the curriculum was interesting, visually engaging, entertaining, humorous, provided new information, and was age appropriate. Pre and post-test data were available for a subsample of 68 students, and paired sample t-tests demonstrated significant increases in the beliefs that tobacco companies lie, target young people, and deny that tobacco products are addictive (p<.01); and significant decreases in perceived prevalence of cigarette and e-cigarette use among peers (<.05), in intentions to use hookah, and beliefs that tobacco can help manage stress, using e-cigarettes is a good way to stop smoking, and that most people who start using tobacco products are able to quit (p<.01). DISCUSSION: This pilot study demonstrates the acceptability and potential impact of an online tobacco prevention curriculum for college students. Further research is needed to evaluate its long-term impact.

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POS3-74
IMPACT OF THE REAL COST CAMPAIGN ON ADOLESCENTS’ RECALL, ATTITUDES, AND RISK PERCEPTIONS ABOUT TOBACCO USE: A NATIONAL STUDY
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OBJECTIVE: While Real Cost campaign ads have targeted youth across the U.S. with messages designed to reduce tobacco use, research has yet to report on the reach and impact of the campaign. This national study examined exposure to Real Cost campaign ads, ad reception, and associations with risk beliefs among adoles-
cents aged 13 to 17 years old. METHODS: Data were analyzed from a nationally representative sample of US adolescents (N=1125) surveyed from October 2014 to June 2015. We assessed aided recall of and attitudes toward the four Real Cost campaign ads, which focused on either physical appearance consequences or loss of control consequences due to addiction. We also assessed perceived likelihood of serious health consequences from smoking. Logistic regression models assessed whether recall of Real Cost ads was associated with perceived likelihood of serious health consequences of cigarette smoking. RESULTS: The majority (88%) of participants reported seeing or hearing at least one of the four Real Cost ads (15% recalled just one ad, 23% recalled 2 ads, 29% recalled 3 ads, and 22% recalled all 4 ads), and 53% (n=588) recalled the slogan “The Real Cost.” The appearance consequences ads had significantly higher recall rates (65% - 76%) than ads that addressed loss of control due to addiction (42% - 50%). The majority of participants reported a more negative attitude toward tobacco products after seeing or hearing the ads, ranging from 70% (addiction theme) to 79% (appearance consequences theme). Recall of any Real Cost ad was significantly associated with a greater likelihood of reporting higher perceptions of serious health consequences of cigarette smoking (AOR=4.76, 95% CI=1.02-22.30) in models adjusted for sex, age, race, and susceptibility to cigarette smoking. CONCLUSIONS: The Real Cost campaign has achieved high reach and frequency of exposure among US adolescents, and the reception of campaign ads has been in the expected direction with larger ad sizes increasing recall. The Real Cost ads were significantly more effective than those that addressed loss of control due to addiction (42% - 50%). The majority (88%) of participants reported seeing or hearing at least one of the four Real Cost ads, in a 2 x 2 experimental design, varying the FDA source size (original source sponsor of The Real Cost video and print ads). METHODS: We recruited 30 susceptible youth for this pilot eye-tracking study. We manipulated The Real Cost ads, in a 2 x 2 experimental design, varying the FDA source size (original source sponsor of The Real Cost video and print ads). RESULTS: Interest in switching differed among the four conditions (F(3, 1164)=21.0, p<.001). Interest in switching was highest and equivalent for “natural / additive-free / ultra-light” (M=2.54, SD=1.22, p<.001) and “organic / natural / additive-free / ultra-light” (M=2.34, SD=1.22, p<.001). CONCLUSIONS: Participants indicated whether “learning that chemicals like lead and hydrogen cyanide are in cigarette smoke” would increase their interest in [organic / natural / additive-free / ultra-light] cigarettes. The 4 point response scale was “not at all” (coded as 1), “a little” (2), “somewhat” (3), and “a lot” (4). We present results from preliminary analyses using ANOVA to analyze the responses and pairwise t-tests for post-hoc tests. RESULTS: Interest in switching differed among the four conditions (F(3, 1164)=21.0, p<.001). Interest in switching was highest and equivalent for “additive-free” (Mean=3.05, SD=1.13) and “natural” (Mean=2.93, SD=1.09). These scored higher than “organic” (M=2.68, SD=1.15, p < .01), which scored higher than “ultra-light” (M=2.54, SD=1.22, p<.001). CONCLUSIONS: Participants indicated that learning chemicals like lead and hydrogen cyanide are in cigarettes would increase their interest in “natural” and similar cigarettes. This suggests that messages about the harmful constituents in cigarette smoke may steer some smokers toward these products rather than the intended goal of deterring smoking. It is especially concerning that this effect is even stronger for the terms “organic,” “natural,” and “additive-free” that are currently in use than for the restricted term “ultra-light.” Unless these words are banned, public health messages about the harmful chemicals in cigarette smoke should emphasize that these chemicals are in all cigarettes including those labeled as “organic,” “natural,” or “additive-free.”

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POS3-75

DOES EMPHASIZING THE HARMFUL CHEMICALS IN CIGARETTE SMOKE INCREASE SMOKERS’ INTEREST IN SWITCHING TO ORGANIC, NATURAL, AND ADDITIVE-FREE CIGARETTES? M. Justin Byron*, Sabeek Baig, Jessica Pepper, Noel Brewer, Lineberger Comprehensive Cancer Center and Gillings School of Global Public Health, University of North Carolina at Chapel Hill, NC, USA

INTRODUCTION: Under the 2009 Tobacco Control Act, FDA has authority to require disclosures on cigarette packs about harmful smoke constituents. We sought to determine whether emphasizing the harmful constituents in cigarette smoke might have an unintended consequence of increasing smokers’ interest in cigarettes labeled as “organic,” “natural,” or “additive-free.” METHODS: We conducted a nationally representative phone survey with 1,168 smokers ages 18+ in . We randomized participants to one of 4 conditions (organic, natural, additive-free, ultra-light). Participants indicated whether “learning that chemicals like lead and hydrogen cyanide are in cigarette smoke” would increase their interest in [organic / natural / additive-free / ultra-light] cigarettes. The point response scale was “not at all” (coded as 1), “a little” (2), “somewhat” (3), and “a lot” (4). We present results from preliminary analyses using ANOVA to analyze the responses and pairwise t-tests for post-hoc tests. RESULTS: Interest in switching differed among the four conditions (F(3, 1164)=21.0, p<.001). Interest in switching was highest and equivalent for “additive-free” (Mean=3.05, SD=1.13) and “natural” (Mean=2.93, SD=1.09). These scored higher than “organic” (M=2.68, SD=1.15, p < .01), which scored higher than “ultra-light” (M=2.54, SD=1.22, p<.001). CONCLUSIONS: Volunteers indicated that learning chemicals like lead and hydrogen cyanide are in cigarettes would increase their interest in “natural” and similar cigarettes. This suggests that messages about the harmful constituents in cigarette smoke may steer some smokers toward these products rather than the intended goal of deterring smoking. It is especially concerning that this effect is even stronger for the terms “organic,” “natural,” and “additive-free” that are currently in use than for the restricted term “ultra-light.” Unless these words are banned, public health messages about the harmful chemicals in cigarette smoke should emphasize that these chemicals are in all cigarettes including those labeled as “organic,” “natural,” or “additive-free.”

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POS3-76

SOCIAL MEDIA ON E-CIGARETTE CESSION AID EFFECTIVENESS Robert Schwartz*, Jan van der Tempel, Aliya Noor mohamed, Cameron Norman, Muhammad Malas, University of Toronto, ON, Canada

BACKGROUND: E-cigarette advertising has exploded on social media networks like Twitter, Facebook, and Instagram. Social media platforms provide a valuable window into the individual and group contexts of e-cigarette use, as well as the main influencers and audiences of e-cigarette-related online communication. METHODS: Using a powerful online data collection tool Sysomos Heartbeat, a sample of 300 high-authority tweets were analyzed. High authority tweets come from the users with the widest and farthest reach within the social network. This method was intended to capture tweets from the most popular 5% of Twitter users, who are estimated to generate up to 75% of activity. RESULTS: Seventy-nine percent (79%) of tweets were pro e-cigarettes as smoking cessation aids. Forty-five percent (45%) of tweets were generated by industry/related users (e-cigarette vendors/ manufacturers and their employees). Thirty-two percent (32%) were produced by Twitter accounts belonging to press/media (news organizations and bloggers), and public figures (celebrities and prominent personalities from business, politics, and Internet). Eleven percent (11%) were Personal users (private individuals) although many of these showed evidence of marketing activity and were therefore labelled personal users with industry ties. Two percent (2%) of tweets originated from healthcare (organizations and professionals) and public health (governmental and non-governmental organizations). CONCLUSIONS: Nearly all high-authority Twitter users express predominantly positive attitudes about e-cigarettes and smoking cessation. The exceptions were governmental and non-governmental organizations with a mandate in public health, and those in healthcare, who lacked consensus about the effectiveness of e-cigarettes as cessation aids. Otherwise these organizations contributed only marginally to the conversation on e-cigarettes and smoking cessation, and were among the least likely to make effective use of hashtags.

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POS3-77

EYE TRACKING THE REAL COST CAMPAIGN: ARE SUSCEPTIBLE YOUTH SEEING WHAT WE WANT THEM TO SEE? Leah Ranney*, Kristen Jarman, Clare Meemik, Liling Huang, Jeanette Porter*, Laura Rue1, Spencer Barnes, Seth Noar*, Adam Goldstein1, 1University of North Carolina at Chapel Hill, Department of Family Medicine, NC, USA, 2University of North Carolina at Chapel Hill, Lineberger Comprehensive Cancer Center, NC, USA, 3University of North Carolina at Chapel Hill, School of Media and Journalism, NC, USA

INTRODUCTION: Adolescence is the most susceptible time for initiating tobacco use. The US Food & Drug Administration (FDA) launched The Real Cost tobacco prevention communication campaign nationally in 2014; one of their target audiences is youth who are susceptible to smoking. We conducted a pilot study using eye-tracking and experimental methods to examine attention to and recall of the FDA as the source sponsor of The Real Cost video and print ads. METHODS: We recruited 30 susceptible youth for this pilot eye-tracking study. We manipulated The Real Cost ads, in a 2 x 2 experimental design, varying the FDA source size (original source size of The Real Cost video and print ads). The US Food & Drug Administration (FDA) launched The Real Cost tobacco prevention communication campaign nationally in 2014; one of their target audiences is youth who are susceptible to smoking. We conducted a pilot study using eye-tracking and experimental methods to examine attention to and recall of the FDA as the source sponsor of The Real Cost video and print ads. METHODS: We recruited 30 susceptible youth for this pilot eye-tracking study. We manipulated The Real Cost ads, in a 2 x 2 experimental design, varying the FDA source size (original source size of The Real Cost video and print ads). RESULTS: The sample was predominantly female, White, and in 12th grade. The mean fixation time on the source was almost three times longer for video than for print ads (0.08s). The mean fixation time for print ads for the larger source was 0.11s compared to 0.008s for the original source size. For the video ads, the mean fixation on the source was similar for the larger (0.13s) and
original (0.19s) source. Regardless of size, 34% of youth correctly recalled the source of the ad, with over twice as many youth recalling the video FDA source (46.7%) compared to the print FDA source (21.7%). The majority (>60%) of youth rated each ad message as mostly or completely believable. DISCUSSION: Youth spent more time attending to FDA as the source of The Real Cost video ads compared to The Real Cost print ads, despite the fact that the source is on the screen for only a brief period of time. Fixation times for larger sources should be further explored. One-third of the youth in the pilot study recall FDA as the source, which may contribute to add effectiveness. Believability of The Real Cost ad content is high among these susceptible youth.

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POS3-78
YOUNG ADULTS’ TOBACCO USE AND EXPOSURE TO TOBACCO MARKETING IN BARS
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INTRODUCTION: Young adults are exposed to tobacco marketing through many venues. One unregulated venue that has received little attention is exposure to marketing and free samples in bars and clubs. METHOD: Participants were 1945 18-29 year old students who reported going to bars or clubs at least rarely (M age=21.4; 66% female; 45% non-Hispanic white, 30% Hispanic, 11% Asian, 7% African American/black and 7% other). Students completed an online tobacco survey in fall 2014/spring 2015. Students self-reported exposure to tobacco/nicotine product advertisements, free samples, industry representatives in bars/clubs, and exposure to free samples of e-cigarettes at events or parties on campus. Students’ also self-reported tobacco and nicotine use. Five tobacco user groups were developed based on number of products used in the past 30 days: non-users; cigarette only users; cigarette and at least one other product users; single, non-cigarette product users; and multiple non-cigarette product users. Multilevel models were used to assess the relationship between tobacco user group and exposure to marketing in bars and on campus controlling for school type (2-year versus 4-year), age, gender, and race/ethnicity. RESULTS: Users of cigarettes and at least one other product consistently reported the highest mean level of exposure to marketing at bars and campus parties/events. Compared to non-users, users of cigarettes and at least one other product reported more frequent exposure to free samples, advertisements, and tobacco representatives at bars as well as free samples at campus events/parties (p<0.05). Further, cigarette only users reported greater frequency of exposure to tobacco representatives at bars as compared to non-users (p=0.05). Finally, users of multiple non-cigarette products reported more frequent exposure to free samples and tobacco representatives at bars than non-users (p<0.05). CONCLUSION: Users of cigarettes and at least one other product were at highest risk for exposure to tobacco marketing in bars and on campus. Findings suggest continued monitoring of bars and campus events is warranted, particularly with an emphasis on free samples.

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POS3-79
MINNESOTA MEDICAL STUDENTS’ ATTITUDES AND EXPERIENCES WITH E-CIGARETTES, 2015
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Although electronic cigarette (e-cigarette) use has rapidly increased in prevalence over the last ten years, not much is known about physicians' attitudes toward e-cigarettes, and to our knowledge, there has not been a study describing what United States medical students think about e-cigarettes. The purpose of this study is to survey medical students at the University of Minnesota to find out what their thoughts, attitudes, and experiences are regarding e-cigarettes. A 3-minute anonymous online survey was distributed to current medical students at the University of Minnesota (n=1000) via email and Facebook. The survey collected basic demographics, information about personal use of e-cigarettes, beliefs about e-cigarette regulation, beliefs about potential health benefits and/or harms of e-cigarettes, and information about education about e-cigarettes in the current medical school curriculum. The survey opened in August 2015. $5 Caribou coffee shop e-gift cards were available to the first 800 participants. 566 medical students completed the survey (56.6% of student body). 56.9% (n=322) of participants identified as female and 40.8% (n=231) identified as male. The mean age of participants was 25.37. 14.1% of participants had personally tried e-cigarettes (n=80) with 5% of these (n=4) identifying as current e-cigarette users. 58.9% of the participants (n=333) knew that e-cigarettes are not FDA approved. Of note, 81.4% (n=461) of participants agreed or strongly agreed that they felt confident about their ability to discuss traditional cigarette use with patients while 69.2% (n=392) disagreed or strongly disagreed that they felt confident about their ability to discuss e-cigarettes with their patients. Subsequent questions identified if, how, and where participants had been educated about e-cigarettes. 91.9% (n=520) of participants believed they had not received adequate education about e-cigarettes in medical school. It is informative to find out what medical students’ knowledge and beliefs are toward e-cigarettes, and it is our hope that the results of this survey can be used in the future to inform curricular development.

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POS3-80
SELF-EVALUATION OF TOBACCO EXPOSURE BY ALLIED HEALTH STUDENTS IN A COMMUNITY COLLEGE ENVIRONMENT
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BACKGROUND: Many health-care employers in Pennsylvania will not hire applicants who had smoked in the past six months. This study was initiated just six months after the college became 100% Tobacco Free in July 2013. METHODS: Students were initially trained in the interpretation of a cotinine immunos assay rapid test. Cotinine standards used in the training included a high cotinine concentration representative of heavy smokers as well as an intermediate cotinine level representative of light smokers and possibly of second-hand smokers. In the second phase of the study, students collected their own first-morning urine at home and then conducted the immunoassay as they had learned in the laboratory. Participation in this phase of the study was totally voluntary and students were provided with appropriate informed consent. Students also completed a questionnaire about their tobacco exposure in the previous 24 hours. RESULTS: Of the 81 students who completed the first year of the study, 54% reported no exposure to a nicotine product in any venue. Their reports were confirmed by their zero urinary cotinine immunoassay results in the previous 24 hours. Heavy daily smokers made up 21% of the study participants (exhibiting >1000 ng cotinine/ml urine). The remaining 25% of the students either resided with smokers and/or rode in an automobile with an individual smoking in the previous 24 hours. Half of these “passive smokers” exhibited elevated cotinine levels similar to that of a light daily smoker (>100 ng cotinine/ml urine). CONCLUSIONS: Few students were aware that a nonsmoker could exhibit significantly elevated cotinine by riding for a short period in a car with a person smoking. A biofilm laboratory was added to the course focusing on recent studies of how tobacco smoke augments biofilm formation in chronic rhinosinusitis, periodontitis, dental caries, and respiratory infections. The bacteriology laboratory was of particular interest to respiratory therapy students who frequently encounter patients with similar gram-negative infections on their clinical rotations.
Poster Session 3 • Friday, March 4, 2016 • 11:30 a.m.-1:00 p.m.

POS3-81
“MAY I BUY A PACK OF MARLBOROS, PLEASE?” A SYSTEMATIC REVIEW OF EVIDENCE TO IMPOVE THE VALIDITY AND IMPACT OF YOUTH UNDERCOVER BUY INSPECTIONS

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INTRODUCTION: Most smokers become addicted before they are legally able to purchase tobacco products. Tobacco retailers play an important role in minors’ access to tobacco, and the Food & Drug Administration (FDA) is investing heavily in undercover purchase inspections in the U.S. To inform FDA and state inspections, we sought to systematically review the literature on undercover purchase protocols regarding their ecological validity. METHODS: Following the PRISMA guidelines for systematic reviews, we iteratively developed keywords in four domains: (1) tobacco, (2) youth, (3) access, and (4) compliance check characteristics. We searched PubMed and PsycINFO and conducted a hand-search of Tobacco Control. We examined citations for records. Using a title and abstract review, two coders independently screened records for inclusion; we created evidence tables and conducted a narrative review. We conducted a legal assessment of protocols’ ability to withstand challenges based on entrapment. RESULTS: We identified 11 studies experimentally assessing undercover buy protocols and 44 studies on the association of youth characteristics and tobacco sales. Of the experimental studies, researchers examined mimicking youth behaviors with assessments of familiarity, lying, use of minors who smoke, purchasing other products (eg, a bag of chips), different types of tobacco products, and using an ID card. Age, gender, and race of the youth were associated with sales. The relationship between sales to minors and neighborhood characteristics was unclear; the percentage of Black or Latino residents in a neighborhood did not always predict sales to minors, nor did neighborhood income. DISCUSSION: The standard compliance check protocol poorly represents the reality of youths’ access to tobacco from retailers. Compliance check programs should allow youth to present themselves as they naturally would (facial hair, makeup, clothing, etc.), hire youth who are already smokers, and attempt to match the racial/ethnic demographics of youth in the community where inspections are taking place. There are few legal barriers for states wishing to improve the validity of their protocols.

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POS3-82
LEARNING FROM THE EVALUATION OF ONTARIO’S WORKPLACE-BASED CESSATION DEMONSTRATION PROJECTS

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BACKGROUND: In 2012-14, 11 Ontario health units developed and implement-ed workplace-based cessation demonstration projects, funded by the Ministry of Health and Long-Term Care. Access to free NRT, Smokers’ Help Line, counsel-ing and self-help materials were offered to over 50 workplaces in construction, manufacturing, hospitality and service, and mining sectors. This presentation dis-cusses evaluation findings and program characteristics that are most effective for different workplace settings. METHODS: Intervention participants completed an Intake Survey (n=686) and were followed up at 6-months (n=319). These data were analyzed using complete cases and intention-to-treat, and logistic regression analyses determined factors that increased the likelihood of quitting. Qualitative data were collected through check-in surveys with public health and workplace leaders; interviews with public health staff, provincial stakeholders, workplace leaders and participants; and focus groups with employees in select case study sites. RESULTS: Overall, 668 employees enrolled in the workplace cessation in-terventions; the majority in manufacturing (56%) and construction (32%). Factors that contributed to program effectiveness included health professional presence, inclusive no pressure approach, accessible NRT, ease of participation, contests and challenges and co-worker support. Of the 319 participants who responded at 6-month follow-up, 27% reported not smoking in the past 30-days. Among those who continued to smoke at 5-months (N=223), the average number of cigarettes smoked per day was reduced from 21 to 13. Workplace and personal stress, de-presion and boredom negatively impacted on program effectiveness. Implementa-tion challenges included shifting employer priorities, difficulty reaching shift or transient employees, workplace closure and layoffs, and low morale. CONCLU-SIONS: Effective workplace-based cessation programs require adequate time for employer engagement, and a tailored, flexible, multi-pronged approach that considers unique workplace characteristics. Equally important are a positive work-place climate and time for employees to participate on-site during work hours.

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POS3-83
NO MENTHOL SUNDAY: ENGAGING FAITH LEADERS TO RAISE AWARENESS AND MOTIVATE ACTION ON MENTHOLATED TOBACCO

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INTRODUCTION: Significant disparities in smoking and related health outcomes persist for African Americans. Predatory targeted marketing of menthol flavored cigarettes has contributed to these disparities. The National African American To-bacco Control Network (NAATPN) piloted the ‘No Menthol Sunday’ campaign on Sunday, May 31, 2015. The event was designed to engage faith-based leaders in raising awareness of the sale and use of mentholated tobacco products. NAATPN disseminated a web-based toolkit with materials to help leaders educate congrega-tants on the dangers of menthol tobacco use, incorporate tobacco-related topics into events and discussions in houses of worship, and encourage congregants to quit. METHODS: A web-based survey was sent to all individuals who downloaded the toolkit and provided email addresses (n=57); survey response rate was 42%. Questions assessed perceptions of the toolkit and congregations’ responses to No Menthol Sunday activities. Semi-structured telephone interviews were conducted with two faith leaders and three church congregants to assess perceptions of the event in more depth. RESULTS: The No Menthol Sunday event was download-ed by individuals in six states; respondents estimate that activities reached over 12,000 congregants. The toolkit was rated positively by most respondents, who indicated finding it informative and easy to use. Most respondents reported that No Menthol Sunday activities were well received by congregants (e.g., congre-gants understood and valued the information presented) and believed the events improved knowledge and motivation to quit. Respondents reported implement-ing a variety of activities, including incorporating information from the toolkit into sermons and facilitating abstinence pledges or congregational resolutions. Key challenges included insufficient lead time and lack of connection to other health events or follow-up activities. DISCUSSION: No Menthol Sunday provides a compelling model for engaging faith leaders as partners in community-based tobacco prevention efforts. The pilot event had multi-state reach and was well received by survey and interview respondents. Respondents recommended launching event outreach earlier, linking to other tobacco and health related events, and imple-menting a follow-up strategy to support sustained engagement. These strategies may increase the reach and impact of future No Menthol Sunday events as well as similar community outreach efforts to other populations experiencing tobacco related health disparities.

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The use of smokeless tobacco (ST) is very common in India. The betel quid chewing habit and its variant predominate. Almost all habitues of betel quid use it with tobacco. In a house-to-house screening survey conducted in three rural Indian districts, tobacco users aged 15 years and above – 10,577 in Ernakulam, Kerala; 10,253 in Srikakulam, Andhra Pradesh; and 9,824 in Bhavnagar, Gujarat – were interviewed. The interviewees were asked about their tobacco habit(s) and its dynamics in terms of how the habit was formed, what made them to continue it and what would make them give it up. Investigations revealed almost no knowledge of the ill effects of tobacco on health existed among the population. In fact they believed that it had healing powers. We educated them using participatory- and user-driven approaches. Everyone received information, which was visually reinforced and which highlighted the association of chewing tobacco with oral pre-cancerous lesions and oral cancer, in a one-to-one as well as a group mode. They were also educated on the advantages and disadvantages of giving up the habit along with individualized ways of quitting the habit. They also received information on withdrawal symptoms and their effective management. Those who gave up the habit were motivated to stay away from it and to act as leaders to help others in giving up the use of tobacco. Two measurements were done, to assess complete cessation and reduction. These measurements were done for all the tobacco uses, smoking as well as smokeless. In Kerala 10.2% of the men and 14.9% of the women stopped the ST habit completely and 25.6% and 31.25% of men and women respectively reduced it. In Andhra Pradesh the total stoppage of the ST habit was 23.6%, with a reduction of 24.4%, whereas in Gujarat the total stoppage was 21.1% and reduction 17.2%. This finding was further substantiated in statistically significant regressions of already existing lesions and the reduction in the incidence of new lesions among the ST users. The data clearly demonstrates that such education can lead to quitting and thus health benefits.

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POS3-85
CREATING SMOKE-FREE HOMES FOR INFANTS AND INCREASING QUITTING AMONG FATHERS THROUGH EDUCATION AND MHEALTH INTERVENTIONS IN CHANGCHUN, CHINA: A PROSPECTIVE, RANDOMIZED, CONTROLLED COHORT STUDY

Erik Augustson1, Pamela Redmon2*, Yixin Duan3, Zongshuan Duan3, Jeffrey Koplan4, National Cancer Institute, MD, USA, 2Georgia State University, GA, USA, 3Emory University, GA, USA

Over 16 million children are born in China each year, and the male smoking norm (53% smokers) exposes 9.36 million newborn babies to secondhand smoke (SHS) in the home. SHS exposure puts infants at risk of developing multiple childhood illnesses, and effective public health interventions are needed to decrease newborns’ SHS exposure. Mobile phone technology has shown positive cessation results, and has the potential to assist families establish smoke free (SF) homes and fathers to quit smoking. The study was designed to determine if a mHealth intervention was successful in encouraging mothers to create SF homes and increasing cessation among fathers who smoke. The intervention promoted cessation among fathers, provided messages on the harms of smoking and SHS, and taught skills for creating a SF home. 305 families with newborns exposed to SHS at home and fathers who smoke at home in Changchun, China were recruited for the prospective, randomized control cohort study. Eligible participants who joined the program were randomized into 3 groups: Control, Intervention A (I-A), and Intervention B (I-B). Control received standard of care provided to newborns. I-A received in-person health counseling and materials on establishing a SF home. I-B received the same intervention as I-A, and a text message intervention targeted at both parents. Parents’ demographic characteristics, tobacco use, home SHS exposure, knowledge of tobacco related illnesses, and attitude towards creating SF homes were assessed at baseline and 6 months via home visit interviews. Bivariate analyses and multivariate logistic regression were conducted to compare the groups. The rate of creating smoke-free homes was 26.5% and fathers’ quit rate was 18.4% for I-B compared to rates for I-A of 20.7% and 10.4%, respectively. I-B was more than twice as likely to have quit smoking compared to I-A (OR=0.46, 95% CI, 1.20–1.01), indicating the TEXT intervention was more effective than counseling and materials. In addition, I-B was more likely to attempt to quit smoking compared to I-A (OR=2.53, 95% CI, 1.10 to 5.85). Other associations were insignificant. The odds of creating SF homes at 6 months were unaffected by the TEXT intervention (p=0.81) or education (p=0.77) or both combined (p=0.28). The results of Changchun mHealth project at the 6-month period indicated that mHealth interventions combined with education may be an effective intervention to increase quitting among fathers. The rate of creating SF homes did not differ significantly between the two intervention groups. This publication is based on research funded by (or in part by) the Bill & Melinda Gates Foundation and the National Cancer Institute. The findings and conclusions contained within are those of the authors and do not necessarily reflect positions or policies of the Bill & Melinda Gates Foundation.

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POS3-86
THE NEED FOR ADOLESCENT TOBACCO CESSATION TOOLS AND TRAINING AMONG MISSOURI SCHOOL NURSES

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INTRODUCTION: The Missouri high school smoking rate is higher than the national average at 14.9%, and schools report tobacco use as a daily problem. School nurses may be well situated to encourage or provide adolescent tobacco cessation. A pilot study of Missouri school nurses was conducted to determine: 1) the strength of the district’s existing tobacco policy; 2) if and how school nurses are involved in helping students quit tobacco; and 3) if school nurses have a need for evidence-based tools and trainings to help students quit. METHODS: Key informant interview were conducted with school nurses (N=8), school nurse coordinators (N=4), and Department of Health and Senior Services staff (N=2). As a result, a survey was sent out to the Lead school nurse at each of the state’s 522 districts asking them to identify their district’s tobacco policy and any cessation services offered. In addition, a focus group was held with school nurses (N=9) to collect in-depth information on the need for, and the barriers to, providing cessation. RESULTS: Half of the school districts responded to the survey (N=266, 51%). Respondents indicated that many district tobacco policies have gaps, such as not indicating a specific position for enforcement (74%), or not including e-cigarettes (45%). Moreover, 17% of districts do not provide any cessation services to students, and only one out of four districts provide one-on-one support (24%) to students quitting tobacco. Themes that emerged from the focus group included: concern about student tobacco use, a lack of training in cessation, a lack of cessation tools or resources, a need for evidence-based tools and trainings, and barriers, such as time constraints, to offering cessation services. CONCLUSIONS: Not all Missouri school districts have comprehensive tobacco free policies that cover all people, all places, all times, and all tobacco products. School nurses are concerned about student tobacco use but do not have the tools or training necessary to assist with cessation efforts. This pilot data indicates a need and support for the development of evidence-based adolescent cessation tools and trainings to be utilized by school nurses.

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POS3-87
MOTIVES FOR ATTITUDES TOWARDS A MULTI-UNIT HOUSING (MUH) SMOKING BAN AMONG RESIDENT SMOCKERS AND NON-SMOKERS

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BACKGROUND: Smoke-free MUH policies may protect the health of residents by promoting cessation and preventing SHS exposure. As smoking bans are in-
creasingly applied to low income communities, where the burden of tobacco use is greatest, residents’ views of these policies may hinder successful implementation. We assessed residents’ motives for their attitudes on smoke-free housing policies.

METHODS: A cross-sectional survey of knowledge, attitudes and behaviors was administered to residents of 12 low-income, MUH developments in 4 eastern U.S. states prior to the implementation of a property-wide smoking ban. Differences in proportions who perceived the ban as “good” or “bad” were assessed using Fishers exact test, while a grounded theory approach was used to qualitatively interpret motives. RESULTS: Respondents included non-smokers (n=140) and smokers (n=61; 87% daily smokers). In total, 81% were female, 65% were aged 50+, and 48% were black, 19% Hispanic/Latino, and 30% white. Fewer smokers viewed the policy as good than bad (28% vs. 33%) compared with non-smokers (83% good vs. 2% bad; p<0.001). Smokers were less likely than non-smokers to believe the policy will be good for themselves or their families (46% vs. 88%), or for their community (41% vs. 87%). Employed smokers were marginally more supportive of the policy than unemployed smokers (p=0.07), while support among non-smokers was greater among unemployed residents (p<0.001) and those with no children (p=0.07). Motive themes for smokers who viewed the policy as bad included: concern about nicotine dependence, problems finding a place to smoke, and violation of personal rights; whereas smokers who felt it was “good” viewed the policy as a motivation to quit. Motive themes among non-smokers who viewed the policy as good included: perceived benefits to their own or their children's health, and a cleaner environment. CONCLUSIONS: Differences in attitudes between smokers and non-smokers to the implementation of a MUH smoking ban may compromise the success of the ban. Tailored communication and support strategies for both smokers and non-smokers may enhance social cohesion and acceptance of smoke-free policies.

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POS3-88

DOES E-CIGARETTE USE AT BASELINE INFLUENCE CESATION RATES AMONGST COMMUNITY COLLEGE STUDENTS?

PRELIMINARY FINDINGS FROM THE WATI STUDY

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Community college (CC) students are a high-risk population for use of cigarettes and other nicotine products including e-cigarettes. E-cigarettes are unregulated and information on safety and efficacy for smoking cessation is limited and mixed. While many studies have examined e-cigarette use amongst young adults and college students, there is little research on CC students. This analysis examines whether baseline e-cigarette use amongst CC smokers was associated with cessation. Subjects were 1277 CC students in a national Web Assisted Tobacco Intervention (WATI) trial from 9/2012 – 2/2015. Subjects were ages 18+ and smoked ≥ 5 cigarettes/week. E-cigarette use at baseline was 35.2%. Total cessation was defined as self-report of no past 30-day use of cigarettes or other non-NDA approved nicotine/tobacco products (including e-cigarettes) at 6 months. 12.7% of students (n=162) reported having quit smoking traditional cigarettes; 8.6% (n=110) reported total cessation. Logistic regression, adjusting for demographics and baseline variables significant at p<0.10 in bivariates, indicated no statistically significant difference in total cessation rates between baseline e-cigarette users and non-users (8.3% vs. 8.7%, respectively). Female gender (OR 1.73, 95% CI 1.11, 2.71), non-daily smoking (OR 0.42, 95% CI 0.22, 0.81), and higher baseline confidence in quitting (OR 1.22, 95% CI 1.09, 1.35) were associated with total cessation. Among those who reported quitting smoking cigarettes but did not meet criteria for total cessation (n=52), 38 (73.1%) reported using e-cigarettes at 6 months (36 reported using only e-cigarettes). About half (47.4%, n=18) were not e-cigarette users at baseline. Overall, baseline e-cigarette use was not associated with total cessation, though female gender, non-daily smoking, and higher baseline confidence were. Among the 4.1% who reported quitting cigarettes but not total cessation, most were current e-cigarette users; half of those may have switched to e-cigarettes. Continued research is needed on the safety of e-cigarettes, impact on cessation, risk for relapse, and potential for development of dual use in this understudied population.

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POS3-90

CONSULTATION WITH E-CIGARETTE RETAILERS REGARDING PRODUCT CHOICE FOR AN E-CIGARETTE SMOKING CESATION TRIAL

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BACKGROUND: The New Zealand (NZ) government remains uncertain as to the importance of having nicotine in e-cigarettes when nicotine can reliably be obtained from nicotine replacement therapy instead. As a result, a pragmatic, three-arm, community-based, randomised trial (n=1809) is planned to evaluate the effectiveness and safety of combining nicotine patches with e-cigarettes (with and without nicotine) plus behavioural support for three months, on smoking abstinence at six and 12 months. One of the challenges for the trial is selecting an e-cigarette to test, in light of a rapidly evolving market. AIM: To undertake a scoping exercise with the NZ vaping community, to ascertain the best e-cigarette to use in the trial.

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POS3-92
CAN SMOKING BANS IN MULTI-UNIT HOUSING CREATE OPPORTUNITIES FOR SMOKING CESSATION?
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INTRODUCTION: As new initiatives are sought to reduce the tobacco burden among low income communities, comprehensive smoke-free policies increasingly are being applied to multi-unit housing. However, little information is available either on smokers’ receptivity to such bans or whether such initiatives will promote cessation.

METHODS: Surveys were conducted with residents of 12 privately managed Housing and Urban Development (HUD) multi-unit housing properties in the eastern U.S. states, immediately prior to implementation of a smoking ban.

RESULTS: Respondents included non-smokers (n=140) and smokers (n=61; 87% daily smokers). In total, 81% were female, 65% were aged 50+, and 48% were Black, 19% Hispanic or Latino, and 30% White. The smokers reported smoking a median of 10 cigarettes per day, and a median of 4 lifetime quit attempts. Ninety-eight percent of smokers and non-smokers were aware of the smoke-free initiative. Similar proportions of smokers were either ‘very concerned’ (33%) or ‘not at all concerned’ (43%) about not being allowed to smoke in their apartments. Half of the smokers reported that their interest in quitting had been changed ‘very much’ or “somewhat” by the smoke-free initiative, while 49% stated that interest in quitting was ‘not at all’ changed. 76% reported feeling ‘very/somewhat’ confident in refraining from smoking in their home. 66% of smokers were motivated to quit in the next 6 months; and 42% reported that they are ‘in the process of quitting now’.

Among the non-smokers, 68% were very concerned about second-hand smoke exposure. CONCLUSIONS: With an anticipated nationwide proliferation of smoking bans in public and multi-unit housing, focused research is required to understand how cessation opportunities and outcomes might be maximized. While there are important promoters and barriers posed by a comprehensive ban, there are indications that a substantial proportion of smokers may be encouraged to engage in a quit attempt in response to a smoke-free housing policy.

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POS3-93
SUCCESSFUL TOBACCO REDUCTION IN ABORIGINAL COMMUNITIES: A SYSTEMATIC REVIEW
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All over the world, Indigenous populations have remarkably high rates of commercial tobacco use compared to non-Indigenous groups. The high rates of commercial tobacco use in Indigenous populations have been associated with a variety of health issues and lower life expectancy than the general population. The objective of this systematic review was to investigate the effectiveness of interventions aimed at reducing commercial tobacco use in Indigenous communities around the world.

METHODS: We undertook a systematic review of peer-reviewed publications and grey literature selected from seven databases and 43 electronic sources. We included studies between 1994 and 2015 if they addressed an intervention (including provision of a health service or program, education or training programs) aimed to reduce the use of commercial tobacco use in Indigenous communities globally. Systematic cross-regional canvassing of informants in Canada and internationally with knowledge of Indigenous health and/or tobacco control provided further leads about commercial tobacco reduction interventions. We extracted data on program characteristics, study design and learning outcomes including successes and challenges.

RESULTS: In the process of this review, we investigated 73 commercial tobacco control interventions in Indigenous communities globally. These interventions incorporated a myriad of activities to reduce, cease or protect Indigenous peoples from the harms of commercial tobacco use. Interventions were successful in producing positive changes in, initiation, consumption and quit rates. Interventions also facilitated increases in the number of smoke-free environments, greater understandings of the harms of commercial tobacco use and a growing community interest in addressing the high rates of commercial tobacco use. Interventions were unable to produce any measured change.
in prevalence rates. CONCLUSIONS: The extent of this research in Indigenous communities globally suggests a growing prioritization and readiness to address the high rates of commercial tobacco use through the use of both comprehensive and tailored interventions. A comprehensive approach that uses multiple activities, the centering of Aboriginal leadership, long term community investments, and the provision of culturally appropriate health materials and activities appear to have an important influence in producing desired change.

The term Indigenous is used to describe the global and international context. In Canada, the term Aboriginal is used to refer to First Nations, Métis and Inuit populations.

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POS3-94
COMMUNITY COLLEGE STUDENTS AND ENGAGEMENT WITH WEB ASSISTED TOBACCO INTERVENTION
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Community college (CC) students’ smoking prevalence (about 28%) is consistently higher than the national adult prevalence (15%). Tailored interventions for college smokers in general are limited, and very little is known about interventions with CC students. Web-Assisted Tobacco Interventions (WATIs) have been shown to be effective in populations when there is high utilization. Web-based features need to be studied for associations with higher utilization. In our comparative effectiveness study, we continue to explore whether CC students will successfully quit when provided with WATIs. Student participants randomized to either a WATI with articles and manual progress tracking tools or to a WATI with highly interactive content and tools allows us to explore whether CC students will use various static and interactive features to quit smoking. Between September 2012 and July 2015, 1,493 students were enrolled in the WATI study. Data demonstrate that CC students will use a WATI. Logs averaged 2.4 times, which is higher than other published study logs. Students took advantage of the types of content and features available through their assigned web program; those assigned to a WATI with static content and manual progress trackers demonstrated a wide range of use of these resources (3%-68%). Students assigned to a WATI with more interactive features used tools such as online interactive trackers (9%-75%) and an online quit plan tool (77%). Patterns of utilization, which vary based on available levels of resource interactivity, will be presented. Though the effectiveness of these programs on long-term smoking abstinence remains to be determined, current results indicate the viability of this modality for reaching this underserved and under-researched population.

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POS3-95
IMPLEMENTING A SMOKING AWARENESS AND CESSATION PROGRAM AT A CANADIAN POST-SECONDARY INSTITUTION OVER THE SUMMER
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BACKGROUND: The school environment represents an accessible avenue for delivering tobacco awareness and cessation activities, Leave The Pack Behind (LTPB) is a program that provides tobacco education and cessation resources to post-secondary students across Ontario, Canada. However, programming is limited to the school year and not provided over the summer months (May to August). The summer may be an opportune time for tobacco awareness and cessation activities. Though the effectiveness of these programs in reducing smoking prevalence is limited, and very little is known about interventions with post-secondary students across Ontario, Canada. However, programming is limited to the school year and not provided over the summer months (May to August). The summer may be an opportune time for tobacco awareness and cessation activities. Though the effectiveness of these programs in reducing smoking prevalence is limited, and very little is known about interventions with post-secondary students across Ontario, Canada. However, programming is limited to the school year and not provided over the summer months (May to August).

Expectations and outreach activities over the summer months had to be modified, as there were fewer students on campus and more students spent time outside. A fun, engaging activity (i.e., a quit and win contest for Canada Day) was necessary to engage students in conversations about tobacco use. Finally, Funding for programming resources was essential for program implementation. Specifically, paid team members boosted morale, maintained enthusiasm, and continued programming when student volunteers were busy or uninterested.

CONCLUSIONS: Overall the pilot project was a success and demonstrated the need for continued tobacco education and cessation programming throughout the year. Other institutions with a large student population over the summer months should explore the need and feasibility of year-round health education programming.

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POS3-96
AUTHENTICITY AND BALANCE: THE USE AND CONSEQUENCES OF DIFFERENT CONVERSATIONAL STRATEGIES IN SEQUENTIAL SESSIONS OF THE NHS COMMUNITY PHARMACY SMOKING CESSATION SERVICE
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BACKGROUND: Worldwide there has been much interest in community pharmacy stop smoking service delivery. A recent US study showed pharmacist stop smoking training to be cost-effective. We have developed such training in London, UK, to tackle the variable and suboptimal performance of the service there. Aims: To develop a training programme for community pharmacy stop smoking advisors using: conversation analysis of real practice, systematic review, theory, qualitative interviews, expert opinion. Methods: For our conversation analysis sub-study we recorded 1-3 consultations for each of 84 smokers in 11 East London community pharmacies. Using a sub-sample of 32 smokers matched on demographic variables and 4-week quit status, we first undertook content analysis to determine statistically significant differences between groups in the interactional strategies used, which highlighted where to focus our conversation analysis. Results: Our approach revealed the differential impact of interactional strategies and their usage as smokers moved through the weeks. Some topics associated with quit success were covered unequally between the 2 groups. Others such as praise were common in both quitters and non-quitters but qualitatively different between groups and over time. Microanalysis revealed adviser issues in balancing: smoker ownership of the quit versus influence of the smoker’s lifeworld; emphasis on smoker willpower versus advisor support benefits; an ‘open door’ policy versus formal sessions. Subtle shifts in balance can result in large differences in smoker behaviour. Combining both content and conversation analyses we also showed advisors made early judgments about which smokers might find it hard to quit and well-meaning over-invested their efforts in these, to the puzzlement of these smokers and the neglect of the quitters. Conclusions: Advisors’ enhanced attempts to empower and motivate smokers they judged would find it hard to quit often had the opposite to the intended effect. Over-use of praise led to the impression they were being inauthentic. Over-use of known effective strategies can be as detrimental as their underuse.

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POS3-98
EFFECTS OF A STATEWIDE TOBACCO CESSATION PROGRAM AMONG INDIVIDUALS INVOLVED WITH ARKANSAS DEPARTMENT OF CORRECTIONS

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Smoking in justice-involved individuals is an ignored public health epidemic. Despite encouraging progress in tobacco cessation in the U.S., justice-involved individuals still smoke at 3 times the rate of the general population. Though most incarcerated individuals experience a forced abstinence, it is estimated that 97% of former smokers released from correctional facilities relapse on tobacco within 6 months. Sadly, efforts to reduce smoking rarely target justice-involved individuals. In response to a critical need for cessation services in this population, the Arkansas Department of Community Corrections implemented the first statewide tobacco cessation program within all probation, parole, and drug court units in 2013. In partnership with the University of Colorado’s Behavioral Health & Wellness Program, providers were trained to implement the DIMENSIONS Tobacco Free Program, an evidence-based intervention consisting of assessment (motivational intervention) followed by a series of 6 group sessions. During each group session, participants provided data tracking tobacco use and readiness to quit. In the first 2 years of the program, over 1100 individuals from 33 unique correctional units across the state attended over 4000 tobacco free group sessions. Results support the feasibility and efficacy of a tobacco cessation intervention uniquely implemented in community corrections. Despite very low availability of nicotine replacement therapy or other tobacco cessation medications for this justice-involved population (pharmachotherapy was reported by <4% of the sample), our results demonstrate significant reduction of tobacco use among participants who attended at least three group sessions. Participants reported increased knowledge, confidence, and intent to quit across group sessions. CONCLUSIONS: The DIMENSIONS Tobacco Free program was successfully implemented at a statewide level among justice-involved individuals. We provide the first evidence that members of this vulnerable population will attend group sessions with regularity, and that this program can assist justice-involved individuals with reducing tobacco use and progress towards readiness to quit.

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POS3-101
MICROBIOLOGY GROWTH FROM TEN HOOKAH BAR PIPES IN THE COMMUNITY

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BACKGROUND: Hookah smoking continues to remain a popular social behavior by young adults. Although it is promoted as having health benefits, hookah smoking carries with it cancer, addiction, heavy metal exposure, high levels of carbon monoxide and the potential for infectious disease transmission. METHODS: For this experiment, samples were collected at ten hookah bars. The samples were collected using a cotton swab to swab an area of the hookah pipe and then transferred onto a nutrient agar medium to grow. The three areas of the pipe that were swabbed were the hose, connector, and mouthpiece. Colony counts and morphologies were conducted on every plate and recorded RESULTS: Colonies of bacteria were noted on many of the plates. Distinct morphologies identified Staphylococcus aureus and Yersenia Pseudotuberculosis. Further tests conducted revealed antibiotic resistance on certain strains of the bacteria. DISCUSSION: Lack of regulation and poor cleaning methods of hookah pipes in community hookah bars can result in infectious disease transmission.

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POS3-102
THE ECOLOGICAL CONTEXT OF SMOKING BEHAVIOR FOR WOMEN WITH GENDER-BASED SEXUAL AND INTIMATE PARTNER VIOLENCE EXPOSURE HISTORIES

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BACKGROUND: The prevalence of smoking is particularly high among survivors of intimate partner and sexual violence. The aim of this study was to characterize the context of smoking behavior among women survivors in order to determine key factors that might serve as key mediators to directly address a smoking cessation intervention or moderators which could prevent this vulnerable group from successfully adhering to smoking cessation treatment. METHODS: Women were randomly selected to complete a cross-sectional, interview administered survey (n=398). Correlation analyses were performed in SAS. RESULTS: Graded, cumulative gender-based violence was associated with intrapersonal and contextual factors which could be influencing both current smoking and survivors’ attempts to quit. Significant differences (alpha < .05) existed between current and former smokers with gender-based violence exposure histories regarding: perceived stress, exposure to fear invoking control by intimate partners, perception of social status, discrimination, adult socioeconomic position, percentage of smokers in time and advice social networks, having a current romantic partner who smokes, and being smoking restrictions. DISCUSSION: Because of the power differentials play in most intimate partner and sexual violence abuse situations, and the unique safety concerns for this population, the social context of a gender-based violence survivor’s smoking behaviors and cessation attempts must be considered when adapting cessation programs to this population. Findings from this study suggest that it may be factors within a survivor’s environment causing stress—a culture tolerant of gender-based violence, social economic standing, connections with friends, advice givers, and romantic partners who smoke, and smoking bans within the home—which must be addressed in concert with intrapersonal factors,
like self-control and affect regulation, to help this vulnerable population succeed in smoking cessation.

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POS3-103
WATERPIPE SMOKING AMONG ADOLESCENTS IN HONG KONG
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BACKGROUND AND AIMS: Waterpipe smoking has increased rapidly among adolescents worldwide. We examined the prevalence of current waterpipe smoking and its associated factors among adolescents in Hong Kong. METHODS: We analyzed data of 2012/13 School-based Survey on Smoking from a representative sample of 35,856 students in secondary school in Hong Kong (mean age: 14.8, SD=1.9). We conducted chi-square tests and t-test to compare current (past 30-day) waterpipe smoking with regard to sociodemographic factors and other covariates, and conducted multivariable logistic regression to examine factors associated with current waterpipe smoking. RESULTS: 1.2% (95% confidence interval [CI]: 1.1-1.4) of students reported current waterpipe smoking, of whom 43% reported dual use of cigarettes within the past 30 days. Waterpipe was the most popular tobacco product after cigarettes. Current waterpipe smoking was associated with older age (adjusted odds ratio [AOR]=1.17 per year, 95% CI: 1.06-1.28), male sex (AOR=1.62, 95% CI: 1.09-2.11), higher self-perceived family financial status (AOR=1.55, 95% CI: 1.04-2.32), poor knowledge about cigarette smoking (AOR=1.97, 95% CI: 1.30-2.98), positive attitudes toward cigarette smoking (AOR=2.71, 95% CI: 1.66-4.44), current cigarette smoking (AOR=2.64, 95% CI: 1.66-4.19), other tobacco use (AOR=4.12, 95% CI: 2.66-6.38), and alcohol consumption (AOR=1.92, 95% CI: 1.17-3.15 for <1 day/month; AOR=5.25, 95% CI: 3.43-8.01 for ≥1 day/month). CONCLUSIONS: Despite the low prevalence, waterpipe smoking should be routinely monitored. Education programs and cessation interventions should address the use of multiple tobacco products and alcohol consumption. Counter-marketing campaigns degrading waterpipe smoking may help prevent adolescents from using waterpipe.

Funding: The Government of the Hong Kong Special Administrative Region of the People’s Republic of China, the Food and Health Bureau

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POS3-104
HISPANIC ETHNICITY INCREASES CHANCE OF QUITTING SMOKING IN OLDER ADULTS, A NATIONALLY REPRESENTATIVE STUDY
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INTRODUCTION: Older persons are more vulnerable to tobacco mortality and less likely to make quit attempts. Less is known, however, about role of race and ethnicity on their quit rates in the United States. Using a nationally represented data of older persons in U.S., we aimed to study race and ethnic differences in whether older current smokers quit. METHODS: WE used data from all ten waves (1994-2012) of the Health and Retirement Study (HRS), a longitudinal nationally representative survey of adults over age of 50 in the United States. We followed 2,372 current smokers at baseline (year 1992) for time to first quit. Race and ethnicity was the main predictors; gender, age, education, marital status, depressive symptoms, and drinking at baseline were control variables. Cox regression was used for analysis of time to quit. RESULTS: Hazard ratio of quitting during the first 10 years was larger for Hispanics, and those with higher education, and was lower for those with higher frequency of drinking alcohol. Hazard ratio of quitting during the full 20 years was not different for Hispanics and non-Hispanic Whites. CONCLUSION: Hispanics are more likely to quit smoking cigarettes for up to 10 years, a difference which may disappear in 20 years; and this finding may help better understanding the Hispanic health paradox, which suggests that even though Hispanic are of lower socioeconomic status they live longer and have better health outcomes than other racial/ethnic groups.

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POS3-105
PROJECT DECOY: DOCUMENTING EXPERIENCES WITH CIGARETTES AND OTHER TOBACCO IN YOUTH
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This abstract provides an overview of a multisite two-year six-wave longitudinal mixed-methods study entitled: “PROJECT DECOY – Documenting Experiences with Cigarettes and Other Tobacco in Youth.” The study’s aims are to: 1) identify market segments of young adults attending colleges/universities in Georgia based on their psychographic profiles using market research; 2) examine the longitudinal epidemiology of tobacco use among these segments over a two-year period, including the sequencing of tobacco product use change and changes in psychosocial sequelae; and 3) investigate reasons for using alternative tobacco products. We used a targeted quota-based on-line sampling procedure with a one-week run-in period to recruit students aged 18-25 across seven campuses in Georgia (two private, two public, two technical colleges, one historically black university (HBU)). Participants completed the online baseline survey assessing psychographic, tobacco use, psychographic, and health-related factors. The brief recruitment period yielded a response rate of 22.9% and a baseline sample of 3418 (64.3% female, 24.3% Black, 7.5% Hispanic). Past 30-day use prevalence was: 13.3% cigarettes, 13.1% little cigars/cigarillos (LCCs); 3.6% smokeless tobacco; 10.9% e-cigarettes; and 12.2% hookah. Multivariate analyses found that significant predictors (p<.05) of cigarette use included being older, male, non-Black, and a technical college student. Predictors of LCC use included being younger, male, non-Hispanic, Black, and not a private college student. Predictors of smokeless tobacco use included being male, White, and a technical college student. Predictors of e-cigarette use included being male, non-Black, and a technical college or HBU student. Predictors of hookah use included being male, Black, and a public school or HBU student. Our diverse sample and methods designed to bolster retention are equipped to address our aims. The resulting data will improve our ability to identify and characterize high-risk youth; inform predictive models of tobacco use risk; enhance understanding of reasons for using tobacco; and inform regulatory efforts regarding tobacco marketing.

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POS3-106
PREMIUM BRANDS AND CONSUMER LOYALTY IN CIGARETTE SMOKERS’ CONTINUED CONSUMPTION
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Brand equity and consumer loyalty play a role in continued purchasing behavior in industry research; however, research has largely focused on nonaddictive products without counter-marketing tactics. Thus, we examined the impact of brand equity and consumer loyalty on cessation among smokers in a consumer panel. We analyzed 1,077 cigarette-purchasing households in the Nielsen Homescan Panel during 2004-2009, augmented with state tobacco control data. We defined cessation as no purchases for at least one year and no subsequent purchases until the end of 2009. Measures of brand equity included premium price (price of preferred brand relative to least expensive brand) and brand market share (unit share). Consumer loyalty was defined as the ratio of tobacco use among these segments over a two-year period, including the sequencing of tobacco product use change and changes in psychosocial sequelae; and 3) investigate reasons for using alternative tobacco products. We used a targeted quota-based on-line sampling procedure with a one-week run-in period to recruit students aged 18-25 across seven campuses in Georgia (two private, two public, two technical colleges, one historically black university (HBU)). Participants completed the online baseline survey assessing psychographic, tobacco use, psychographic, and health-related factors. The brief recruitment period yielded a response rate of 22.9% and a baseline sample of 3418 (64.3% female, 24.3% Black, 7.5% Hispanic). Past 30-day use prevalence was: 13.3% cigarettes, 13.1% little cigars/cigarillos (LCCs); 3.6% smokeless tobacco; 10.9% e-cigarettes; and 12.2% hookah. Multivariate analyses found that significant predictors (p<.05) of cigarette use included being older, male, non-Black, and a technical college student. Predictors of LCC use included being younger, male, non-Hispanic, Black, and not a private college student. Predictors of smokeless tobacco use included being male, White, and a technical college student. Predictors of e-cigarette use included being male, non-Black, and a technical college or HBU student. Predictors of hookah use included being male, Black, and a public school or HBU student. Our diverse sample and methods designed to bolster retention are equipped to address our aims. The resulting data will improve our ability to identify and characterize high-risk youth; inform predictive models of tobacco use risk; enhance understanding of reasons for using tobacco; and inform regulatory efforts regarding tobacco marketing.

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dominant brands were $1.31 (SD=0.49) and 15.41% (SD=19.15), respectively. The mean brand loyalty level was 0.90 (SD=0.17), indicating high loyalty. Higher price premium was associated with lower quit rates; lower consumer loyalty was directionally associated with increased quitting. By the end of 2009, the adjusted cumulative quit rate among those who purchased high price premium and large unit share brands was 20.63% versus 28.15% among those who purchase low price premium and small unit share brands. Other predictors of lower quit rates included higher nicotine intake (P=0.05), higher baseline purchase frequency (P<0.001), and being African American (P=0.009). Tobacco control factors were not associated. In conclusion, smokers of high equity cigarette brands are less likely to quit, perhaps due to strong brand-consumer relationships. Thus, continued efforts should aim to regulate tobacco marketing efforts that create brand equity in order to disrupt these relationships to promote cessation.

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**POS3-107**

**SEXUAL ORIENTATION DISPARITIES IN SMOKING VARY BY SEX AND HOUSEHOLD SMOKING AMONG U.S. ADULTS: FINDINGS FROM THE 2003-2010 NATIONAL HEALTH AND NUTRITION SURVEYS**

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**BACKGROUND:** High rates of smoking have been observed in samples of lesbian, gay, and bisexual populations. Social networks, in particular household members, have been identified as a critical aspect of smoking behaviors. However, there is a paucity of research on the role of such networks in explaining sexual orientation-related disparities in tobacco use. The purpose of this study was to examine whether sexual orientation-related smoking disparities in males and females varied by household smoking behaviors in a nationally representative sample of US adults. METHODS: Data were drawn from the 2003-2010 National Health and Nutrition Examination Surveys, which assessed 14,972 individuals ages 20 to 59 years for sexual orientation, current smoking status, and household smoking. Weighted multivariable logistic models were fit to examine whether differences in current smoking status among sexual minority adults compared to heterosexuals was moderated by household smoking and sex, adjusting for covariates.

RESULTS: Lesbian and bisexual females had significantly higher smoking prevalence compared to heterosexual females. The three-way interaction among sex, sexual minority status, and living with a household smoker was significantly adjusted odds ratio [AOR] = 28.55, p < 0.001). The interaction between sexual identity and household smoking was significant for both males (AOR= 6.40, p < 0.05) and females (AOR = 0.21, p < 0.01) but was in the opposite direction. Among gay and bisexual males, compared to heterosexual males, living with a smoker was associated more strongly with greater odds of smoking. In contrast, among females, living with a smoker was more strongly associated with greater odds of smoking for heterosexuals compared to lesbians and bisexuals. CONCLUSIONS: Findings suggest that living with a household smoker may contribute to elevated smoking prevalence in sexual minority males and heterosexual females. Future research is warranted to examine characteristics of househol, including smoking behaviors and composition, to guide more effective and tailored smoking cessation interventions for males and females by sexual orientation.

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**POS3-108**

**DO ADULT E-CIGARETTE USERS DIFFER BY GENDER?**

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**INTRODUCTION:** Electronic cigarettes (e-cig) are becoming increasingly popular but little is known whether e-cig users differ by gender. METHODS: An online survey of adult (aged 18 and over) ever smokers in Ontario, Canada was conducted between February and March 2015. Factors associated with ever use of e-cigs in lifetime and current daily use of e-cigs in the past 30 days by gender were examined using multivariable logistic regression. RESULTS: Of the eligible 1,926 participants, the majority were female (63%) and 37% male. Males and females had a similar proportion of ever use of e-cigs (63.5% vs. 63.7%), but males were more likely to be current daily e-cig users than females (13.9% vs. 9.3%, P<0.01). Females were more likely to be White and highly educated, but less likely to be married and employed, and less likely to use e-cigs containing nicotine or to use e-cigs due to taste and price, compared to males. Logistic regression showed that among males, young adults (aged 18-34) and current smokers were more likely to be e-cig ever users; among females, young adults and current daily smokers, and those with self-rated addiction to tobacco were more likely to be e-cig ever users. Among male e-cig ever users, those who used e-cigs containing nicotine, used e-cigs to avoid relapsing to tobacco cigarettes, and used e-cigs because they were cheaper than tobacco cigarettes were more likely to be current daily e-cig users; but those who used e-cigs because of curiosity were less likely to be current e-cig users. Among female e-cig ever users, those who used e-cigs containing nicotine, used e-cigs to reduce or quit tobacco smoking, to avoid relapsing to tobacco cigarettes and to cope with stress, used e-cigs because they were cheaper than tobacco cigarettes, and perceived e-cigs as a healthier alternative to tobacco cigarettes were more likely to be current daily e-cig users; but those who used e-cigs because of curiosity were less likely to be current daily e-cig users.

CONCLUSIONS: E-cig policies should consider differences in e-cig use between genders, especially with respect to factors associated with daily e-cig use.

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**POS3-109**

**DENIER VERSUS ADMITTER SMOKING STATUS IN A POPULATION-BASED STUDY**

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There has been substantial progress in tobacco control over the past few decades, as the smoking rate has dropped by 40% in the past 30 years. This has coincided with a growing stigma against smokers, which may lead some individuals to deny being a smoker despite current cigarette use. This “denier” phenomenon has received recent attention in the literature with studies finding that, compared to “admitters,” deniers smoke less frequently, are less likely to think that they are addicted, and are less likely to think that secondhand smoke is harmful. However, little is known about: 1) deniers’ use and perceptions of emerging tobacco products or 2) the effects of population-level interventions, such as state tax increases, on the cessation behavior of deniers and admitters. The state of Minnesota implemented a $1.60 cigarette tax increase in 2013, one year prior to the 2014 Minnesota Adult Tobacco Survey (MATS), providing an opportunity to address these research gaps. This study draws from the 2014 MATS, a population-based survey of Minnesota adults. Participants were 225 adults who reported smoking 100 cigarettes lifetime, currently smoking “some days” as opposed to “everyday” or “never,” and past 30 day smoking. Surveys also assessed smoker identity, emerging product use and perceptions, and changes in behavior as a result of the tobacco tax increase. Responses to the smoker identity item were used to classify respondents as “admitters” or “deniers.” Descriptive analyses and multivariate logistic regressions were used. Regressions revealed no associations between denier status and e-cigarette or hookah use (ps>.10). Deniers reported less perceived harm from occasional smoking than did admitters (OR= 375, p<.05). Relative to deniers, admitters were more likely to report having changed their behaviors in response to the tax (OR= 0.16, p<.001). Findings indicate that deniers and admitters do not differ in their use of emerging tobacco products. Results also suggest that tobacco tax increases may be less effective at reducing tobacco use among deniers than among the general population. More research is needed on identity-based programs or tailored communication for deniers.

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INTRODUCTION: Tobacco use is rising in epidemic proportions worldwide. WHO estimates 800,000-1,000,000 people initiating tobacco on daily basis, a significant among them are females. In India, increasing trend of tobacco use among females is seen. At early ages, addiction is stronger making them life-long users. Thus preventing experiments, initiating and regular use among females is a vital strategy of tobacco control efforts. METHODOLOGY: A secondary analysis of the disaggregated publically accessible data (the Global Adult Tobacco Survey-GATS, India 2009-10) was done for the adult population age 15 years and above. Only valid responses were considered. Results GATS reported initiation of tobacco use among males and females at age of 12 years. More Females (5%) started smoking at age 12 than men (3%) at the same age. 12% of females started smoking less tobacco products at age of 12 years as opposed to 4% of males. Also data shows that 44% females start dual tobacco use at same age compared to 32% of males. Policy Intervention While implementing the 85% Graphic warnings (PHW) we can increase the efficacy among users to increase knowledge and remove concerns about harms by strengthening the utilization process of the PHW to discourage tobacco use among users. We also feel that the additional provision in the proposed amendment of the COTPA (Indian Tobacco Control Legislation) bodes well for females who might be inclined to use tobacco. Raising the minimum age of sale of tobacco from 18 to 21 is likely to make a difference. Additionally when the ban on sale of single cigarettes is implemented it will further discourage initiation especially among those who do not have much out of pocket money to spare for tobacco and that includes young females as well. Expected results All these provisions are likely to impact women as well. Studies show that if someone is not smoking by the age they are 21, there’s only a 5% chance they will ever start smoking as an adult.

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POS3-111 REASONS FOR ELECTRONIC NICOTINE DELIVERY SYSTEM USE AND SMOKING ABSTINENCE AT 6 MONTHS: A DESCRIPTIVE STUDY OF CALLERS TO EMPLOYER AND HEALTH PLAN-SPONSORED QUITLINES

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OBJECTIVE: Describe cigarette smoking abstinence among employer and health plan-sponsored quitline registrants who were not using Electronic Nicotine Delivery Systems (ENDS), were using ENDS to quit smoking, or were using ENDS for other reasons at the time of quitline registration. METHODS: We examined 6,029 quitline callers aged ≥18 years who smoked cigarettes at registration, and completed ≥1 quit calls, baseline ENDS use questions, and a 6-month follow-up survey (response rate: 52.4%). Thirty-day point prevalence smoking quit rates (PPQR) were assessed at 6-month follow-up (ENDS-only users were considered quit). Data were weighted for response bias. Logistic regression analyses controlled for participant characteristics and program engagement. RESULTS: At registration, 13.8% of respondents used ENDS (7.9% to quit smoking, 5.9% for other reasons). Thirty-day PPQRs were: 55.1% for callers using ENDS to quit, 43.1% for callers using ENDS for other reasons, and 50.8% for callers not using ENDS at registration. Callers using ENDS for other reasons were less likely to quit than other groups (adjusted Odds Ratios = 0.65, 0.77). Among callers using ENDS to quit at baseline, 40% used ENDS regularly at follow-up. CONCLUSIONS: ENDS users not using ENDS to quit smoking were less successful at quitting at 6-month follow-up compared to callers using ENDS to quit smoking and callers who did not use ENDS at program registration. Incorporating reasons for ENDS use may be important for future studies examining the role of ENDS in tobacco cessation.

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POS3-112 E-CIGARETTE AND HOOKAH EXPECTANCIES AMONG YOUNG ADULT NON-DAILY CIGARETTE SMOKERS

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INTRODUCTION: Cigarette smoking expectancies are important predictors of cigarette smoking, but little research has assessed the possible impact of expectancies on use of alternative nicotine and tobacco products (ANTPs). This relationship is potentially important in light of the increasing prevalence of ANTP use, particularly in youth and young adults. The purpose of the present study was to address this gap by testing the hypothesis that more positive expectancies about e-cigarette and hookah tobacco effects would be associated with heavier use of these products. METHODS: Participants (n = 230; 53% male) were young adult non-daily smokers aged 18-24 who were participating in a larger, longitudinal study. Participants had smoked ≥ monthly for ≥ 6 months and had never been daily smokers. They completed an initial assessment of tobacco and other substance use, expectancies, mood and personality measures. Assessments were completed online or via mobile phone. RESULTS: Greater than one-third of participants reported using hookah (80/230) and nearly one-third (71/230) reported using e-cigarettes in the past two weeks. Higher e-cigarette expectancy scores were significantly associated with using at least one e-cigarette in the past two weeks, and with heavier use over the same period. Similarly, higher hookah expectancies were significantly associated with the likelihood of any hookah use in the past two weeks and with greater frequency of hookah use (all ps < .001). CONCLUSION: Findings suggest a high prevalence of recent ANTP use among young adult non-daily smokers. These data also indicate that expectancies may be a worthwhile target for interventions designed to prevent or reduce ANTP use.

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POS3-113 PREDICTORS OF E-CIGARETTE USE AMONG YOUNG ADULT NON-DAILY CIGARETTE SMOKERS

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INTRODUCTION: The effectiveness of e-cigarettes as a harm reduction strategy is controversial. One concern is that e-cigarette use may spread beyond smokers who have been unable to quit and ultimately promote nicotine dependence and cigarette uptake/progression among light or non-smokers. The purpose of the present study was to examine associations between e-cigarette use and cigarette variables in a sample of young adult non-daily smokers. Participants were aged 18-24 (n = 230; 53% male), had smoked ≥ monthly for ≥ 6 months, and had never been daily smokers. Participants completed a baseline assessment of tobacco and other substance use, mood and personality online or via mobile phone as part of a larger longitudinal study. RESULTS: Nearly one-third (71/230) of participants reported using e-cigarettes in the past 14 days. Greater frequency of e-cigarette use was significantly associated with heavier cigarette smoking, using e-cigarettes in contexts where cigarettes were not allowed, and the perception that e-cigarettes are less harmful than cigarettes. Frequency of e-cigarette use was inversely related to intention to quit and likelihood of quitting or reducing cigarette smoking in the next month and the next year. CONCLUSION: Findings suggest a high prevalence of e-cigarette use among young adults who smoke intermittently. Data are not consistent with harm reduction relative to cigarettes as a primary motive for e-cigarette use among young adults.

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E-CIGARETTE DUAL USERS DIFFER FROM EXCLUSIVE USERS ON HARM PERCEPTIONS AND PERCEIVED PEER USE FOR VARIOUS TOBACCO PRODUCTS

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INTRODUCTION: E-cigarette use among adolescents is on the rise; however, few studies have examined adolescents' dual use of e-cigarettes with conventional cigarettes. The purpose of the current study was to examine differences in the characteristics of adolescent non-users, cigarette-only, e-cigarette-only, and dual e-cigarette and cigarette users (“dual users”). METHODS: Participants were 13,602 middle and high school students (49.9% female; 43.9% non-Hispanic white, 41.1% Hispanic). RESULTS: Compared to students who reported exposure to e-cigarette advertisements ‘never/rarely,’ the odds of current e-cigarette use were significantly (p<0.05) greater among those reporting exposure ‘sometimes’ and ‘mostly/always’, respectively, as follows: Internet (MS adjusted odds ratio [AOR]: 1.41, and 2.91; HS AOR: 1.49, and 2.02); newspapers/magazines (MS AOR: not significant, and 1.87; HS AOR: 1.26 and 1.71); retail stores (MS AOR: 1.78, and 2.34; HS AOR: 1.37, and 1.91); and TV/movies (MS AOR: not significant, and 1.80; HS AOR: 1.24, and 1.54). Conclusions: E-cigarette advertisement exposure is associated with current e-cigarette use among U.S. students, and greater exposure is associated with higher odds of e-cigarette use. Given that youth use of tobacco in any form is unsafe, comprehensive tobacco control and prevention strategies are critical to prevent youth use of all tobacco products, including restrictions on advertising, promotion, and sponsorship.

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ELECTRONIC CIGARETTE USE AND ADVERTISMENT EXPOSURE AMONG U.S. MIDDLE AND HIGH SCHOOL STUDENTS, 2014

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BACKGROUND: Electronic cigarette (e-cigarette) use among U.S. students increased significantly during 2011-2014. In the U.S., e-cigarettes have been heavily advertised via several media, including television, using similar themes and tactics shown to promote conventional tobacco use among youth. This study examined the association between e-cigarette advertisement exposure and current e-cigarette use among U.S. middle school (MS) and high school (HS) students. METHOD: Data came from the 2014 National Youth Tobacco Survey (N=22,007), a survey of MS and HS students in grades 6-12. The association between self-reported current (past 30-day) e-cigarette use and exposure to e-cigarette advertisements via four media—Internet, newspapers/magazines, retail stores, and TV/movies—was assessed. Three advertising exposure categories were assessed: never/rarely, sometimes, and mostly/always. Separate logistic regression models were used to measure the association between advertisement exposure among students who viewed each form of media and current e-cigarette use, adjusting for sex, race/ethnicity, grade and other tobacco use (cigaretes, cigars, hookah, smokeless, snus, pipes, bids, dissolvables). RESULTS: Compared to students who reported current e-cigarette use were significantly (p<0.05) greater among those reporting exposure ‘sometimes’ and ‘mostly/always’, respectively, as follows: Internet (MS adjusted odds ratio [AOR]: 1.41, and 2.91; HS AOR: 1.49, and 2.02); newspapers/magazines (MS AOR: not significant, and 1.87; HS AOR: 1.26 and 1.71); retail stores (MS AOR: 1.78, and 2.34; HS AOR: 1.37, and 1.91); and TV/movies (MS AOR: not significant, and 1.80; HS AOR: 1.24, and 1.54). Conclusions: E-cigarette advertisement exposure is associated with current e-cigarette use among U.S. students, and greater exposure is associated with higher odds of e-cigarette use. Given that youth use of tobacco in any form is unsafe, comprehensive tobacco control and prevention strategies are critical to prevent youth use of all tobacco products, including restrictions on advertising, promotion, and sponsorship.

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E-CIGARETTE DUAL USERS DIFFER FROM EXCLUSIVE USERS ON HARM PERCEPTIONS AND PERCEIVED PEER USE FOR VARIOUS TOBACCO PRODUCTS

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INTRODUCTION: E-cigarette use among adolescents is on the rise; however, few studies have examined adolescents’ dual use of e-cigarettes with conventional cigarettes. The purpose of the current study was to examine differences in the characteristics of adolescent non-users, cigarette-only, e-cigarette-only, and dual e-cigarette and cigarette users (“dual users”). METHODS: Participants were 13,602 middle and high school students (49.9% female; 43.9% non-Hispanic white, 41.1% Hispanic).
Use of hookah and e-cigarettes is growing nationwide and internationally. Among Mexican American (MA) adults, acculturation to mainstream American culture is a risk factor for cigarette use. Currently little is known about use of these products among MAs or the relationship between product use and acculturation. Therefore in the current analysis we examine the relationship between acculturation and use of hookah and e-cigarettes among MA adults who reside on the Texas-Mexico border. We recruited 92 MAs between 18 and 29 years of age from the Cameron County Hispanic Cohort between June and December 2014. We targeted cigarette smokers, and recruited 56 women (64% ever cigarette smokers) and 34 men (83% ever cigarette smokers). Participants reported their ever use of hookah and e-cigarettes, and provided data on linguistic acculturation (Cronbach’s α=0.84), perceived pressure to assimilate to mainstream American culture e-cigarettes (Cronbach’s α=0.71), and acculturation-related stress (Cronbach’s α=0.74). We examined mean differences on these three scales by ever use of hookah and e-cigarettes using Student’s t-tests. Among the women, 44% reported ever use of hookah and 43% reported ever use of e-cigarettes. Among the men, 56% reported ever use of hookah and 57% reported ever use of e-cigarettes. A higher percent of men than women reported using both products (22% vs. 7%). Ever users of hookah reported higher levels of linguistic acculturation (p=0.01), perceived greater pressure to assimilate to mainstream American culture (p<0.05), and reported lower levels of ethnic-based discrimination (p=0.01) than never users. A similar pattern was observed among ever users of e-cigarettes compared to never users, however only perceived pressure to assimilate to mainstream American culture (p<0.01) were significant. Our results suggest that a better understanding of acculturation and related risk factors, such as stress and perceived pressure to assimilate, is warranted. Honing our understanding of how these experiences influence smoking behavior may serve to improve preventive intervention for this growing population.

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POS3-119
SECONDHAND SMOKE EMISSION LEVELS IN WATERPIPE CAFES IN DOHA, QATAR

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BACKGROUND: Exposure to the emissions of tobacco waterpipe is associated with increased health risks among its users as well as those exposed to its secondhand smoke. Waterpipe use is an emerging concern to the tobacco control community, particularly among countries of the Eastern Mediterranean Region. In 2002, Qatar adopted legislation that prohibited cigarette smoking inside public venues, but exempted tobacco waterpipe smoking. To inform the development and enforcement of effective policy, the impact of cigarette and waterpipe use on indoor air quality was monitored in waterpipe cafes in Doha, Qatar. DESIGN/ METHODS: We particulate matter (PM2.5) levels were measured inside and outside of a sample of 40 waterpipe cafes and 16 smoke-free venues in Doha, Qatar between July and October of 2012. In addition, the number of waterpipes being smoked and the number of cigarette smokers were counted within each venue. Non-paired and paired sample t-tests were used to assess differences in mean PM2.5 level found immediately outside waterpipe venues (35 μg/m3; p<0.001). In smoke-free venues, the outside mean PM2.5 level (30 μg/m3) did not differ significantly from the mean PM2.5 levels inside these venues (p=0.121). CONCLUSION: Elevated levels of particulate pollution were found in waterpipe cafes in Doha, Qatar, utilizing waterpipe smoking is not safe for the public from the dangers of SHS, and to change social norms around tobacco use, smoke-free policies that apply to all forms of combusted tobacco products, including waterpipe, are needed.

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POS3-120
DEVICE TYPES AND TERMINOLOGY AMONG CURRENT USERS OF ELECTRONIC NICOTINE DELIVERY SYSTEMS

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OVERVIEW: Several types of electronic nicotine delivery systems (ENDS) exist; however, little is known about use of different types of ENDS devices and the terminology used to describe them, making surveillance difficult. METHODS: Current ENDS users (past month users of ‘an e-cigarette or other vaping device’) from two nationally-representative phone surveys (ages 13+ indicated which device type they used most often in the past month: one you throw away when you’re done (disposables); one you recharge and use pre-filled cartridges in (cartridge-based devices); one you recharge and open to refill with e-liquid (refillable tanks); another type (open-ended responses were back-coded or excluded). Users stated what they called the device with open-ended responses, which were collapsed into three terminology categories: e-cigarette (e.g., e-cigarette, e-cig), vape (e.g., vapes, vape pen), and other (e.g., hookah pen, mod). RESULTS: Adult ENDS users (18+, N=532) were 51.7% male and 74.8% Caucasian. Over half used refillable tanks (60.3%), a quarter used cartridge-based devices (24.3%), and fewer used disposables (15.4%). Just over half (53.0%) used e-cigarette terminology, 29.8% used vape terminology, and 17.2% used another term. Chi-square analyses revealed that terminology varied by device type, χ2(4, N=444)=33.197, p<.001. Adults using vape terminology mostly reported using refillable tanks (79.5%). However, adults using e-cigarette terminology used a variety of devices; refillable tanks (54.1%), cartridge-based devices (30.9%), and disposables (15.0%). Adolescent ENDS users (13-17, N=58) were 61.0% male and 89.8% Caucasian. Most used refillable tanks (78.9%) and fewer used cartridge-based devices (10.5%) or disposables (10.5%). Almost half (49.1%) of adolescents used vape terminology.
29.1% used e-cigarette terminology, and 21.8% used another term. CONCLUSIONS: 47% of adults and 70% of adolescents didn’t use e-cigarette terminology to describe their ENDS device, although many surveys use this type of terminology to assess ENDS use. Our findings show use may be under-reported and that assessing device type and terminology are important for accurate surveillance.

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**POS3-121**

PERCEIVED SATISFACTION FROM VAPE (E-CIGARETTES) IS EQUAL TO OR GREATER THAN THAT FROM CIGARETTES IN DAILY COMPARED TO NON-DAILY USERS OF E-CIGARETTES

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AIM: To assess how the “satisfaction” from e-cigarettes compares to that of cigarettes in daily and non-daily users of e-cigarettes. METHODS: Data are cross-sectional from the baseline assessment of Operation: SAFETY (Soldiers And Families Excelling Through The Years), an ongoing longitudinal study of US Army Reserve/ National Guard Soldiers and their partners. The focus of the overall study is on mental health, trauma, and resiliency, and the e-cigarette questions were among questions on alcohol, other drug use and tobacco use. Participants were asked: “Do you currently use e-cigarettes or a vaping device?” Those answering “Some days” or “Every day” were asked: “Is your favorite e-cigarette or vaping device more or less satisfying than your favorite cigarette?” with options: 1) My favorite e-cig or vaping device is much more satisfying . . . . 2) My favorite e-cig or vaping device is less satisfying . . . . 3) My favorite e-cig or vaping device is about as satisfying . . . . 4) My favorite e-cig or vaping device is a little more satisfying . . . . 5) My favorite e-cig or vaping device is much more satisfying . . . . Fisher-Exact Test assessed differences between daily and non-daily users in satisfaction. RESULTS: 29% reported ever use of e-cigs. 100% of daily users (N=10) said e-cigs were at least as satisfying as cigarettes [6 of 10 said “much more satisfying”]; 41% of “some day” users (11 of 27) said e-cigs were at least as satisfying as cigarettes (P = 0.002, 2-tailed). Overall, 57% said e-cigs were at least as satisfying as cigarettes (41% reported e-cigs as at least a little more and 32% reported e-cigs as much more satisfying). CONCLUSIONS: For self-selected adult users, e-cigs can be at least as satisfying as cigarettes in daily and non-daily users of e-cigarettes. Further research should explore how product differences and individual differences contribute to the perceived satisfaction from e-cigs.

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**POS3-122**

SMOKING IDENTITY AMONG AFRICAN AMERICAN YOUNG ADULTS

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A limited body of research, primarily among college students, suggests that about 50% of young adults deny being cigarette smokers despite having smoked in the previous 30 days. This qualitative study explored smoking identity among Black young adults to consider whether and to what extent they deny a cigarette smoker identity. We conducted 44 interviews with Black young adult (18-25 years old) cigarette smokers and non-smokers in the San Francisco Bay Area. Interviews were digitally recorded and transcribed, and transcripts were linked to ATLAS.ti, a qualitative data management software program, to facilitate pattern-level analysis. As other studies have shown, some current smokers in our sample did not identify themselves as cigarette smokers. This was, in part, because they did not perceive themselves to be addicted to cigarettes, reporting that they do not “have to smoke,” or they “don’t do it all the time.” Similarly, both self-identified cigarette smokers and non-smokers related smoker identity to cigarette dependence and the frequency/number of cigarettes smoked per day. Participants who were both cigarette smokers and blunted (i.e., marijuana users) emphasized distinctions between a cigarette smoker identity and marijuana smoker identity. These participants tended to identify more strongly, or even exclusively, as marijuana users rather than cigarette smokers. These results suggest that the meaning of a cigarette smoker for Black young adults, which is defined primarily by tobacco dependence, may lead some to reject a cigarette smoker identity. The adoption of a marijuana identity among co-users may be an additional strategy to reject a cigarette smoker identity. Implications of these findings for tobacco prevention and cessation will be discussed.

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**POS3-123**

SMOKING CESSATION CHARACTERISTICS AND HEALTH PROFESSIONAL ADVICE TO QUIT AMONG A NATIONAL SAMPLE OF ADULTS WITH AND WITHOUT DIABETES

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Cigarette smoking is causally associated with diabetes, with smokers having a 30-40% higher risk of diabetes compared to non-smokers. Quitting smoking can reduce long-term risk for diabetes or diabetes-related complications. Interventions from health professionals can increase quit rates, with the 5As (ask, advise, assess, assist, arrange) being the gold standard intervention. This study aimed to provide nationally-representative data on the tobacco cessation and prevalence of self-reported receipt of each of the 5A steps among adults with and without diabetes. Data for this study came from adults with diabetes (n=1,999) and without diabetes (n=17,387) who responded to the 2009-2010 National Adult Tobacco Survey, a nationally-representative, landline and cellular telephone survey of US adults aged 18-25 years. Weighted frequencies of cigarette smoking, smoking cessation, and receipt of each 5A step were computed by diabetes status. Logistic regression was used to compute adjusted prevalence ratio of receipt of each of the 5As. Among smokers, 8.4% reported being told by a doctor they had diabetes. Among individuals with diabetes, 16.7% reported past month smoking (vs. 19.8% of adults without diabetes, p<.05). A higher percentage of adult past year smokers with diabetes had ever tried to quit (85.6% vs. 80.6% for no diabetes, p<.05), but the percentage of past year quit attempts was similar between smokers with and without diabetes (p=0.12). Among smokers with diabetes, 91.4% reported being asked about tobacco use, 76.8% reported being advised, 54.2% reported being assessed, 45.4% reported receipt of assistance, and 10.7% reported having arranged follow-up. Adjusting for demographics, smokers with diabetes (vs. without) were more likely to report clinician advice and assistance to quit. In conclusion, adult smokers with diabetes are just as likely as those without diabetes to have a past year quit attempt, and are more likely to receive clinician advice and assistance to quit. However, the prevalence of reported assessment, assistance to quit, and arrangement of follow-up remain suboptimal. Continued emphasis on smoking cessation is important to prevent and control diabetes.

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RACIAL/ETHNIC DIFFERENCES IN DURATION OF SMOKING AMONG FORMER SMOKERS IN THE 1999-2012 NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY (NHANES)

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BACKGROUND: The burden of tobacco-related disease is not uniformly distributed across populations defined by race/ethnicity. Differences in duration of smoking by race/ethnicity may contribute to this disparity. Previous studies however have examined racial/ethnic differences in smoking duration among ever smokers (former and current smokers combined) and it is unknown if the duration of smoking before quitting differs by race/ethnicity. OBJECTIVE: To compare duration of smoking by race/ethnicity among former smokers. METHODS: We studied 6,030 White, Black and Mexican-American former smokers (3,647 men and 2,383 women) 20-79 years of age who participated in the National Health and Nutrition Examination Survey (NHANES) from 1999 through 2012. RESULTS: After adjustment for demographics, age at smoking initiation and intensity of smoking compared to White men, Black men had smoked for a mean of 2.3 (95% CI: 1.3, 3.3) years longer before quitting and Mexican-American men had smoked for a mean of 0.2 (95% CI: -1.6, 1.2) years less before quitting. Compared to White women, Black women had smoked for 1.9 (95% CI: 0.7, 3.0) years longer before quitting and Mexican-American women had smoked for 0.3 (95% CI: 2.4, 0.6) years less before quitting. CONCLUSIONS: In a representative sample of U.S. adults, Black former smokers continued smoking for longer periods before quitting compared to White former smokers. These findings support the need for smoking cessation efforts that address racial/ethnic differences in smoking behaviors. The longer time to quit among Black former smokers should be investigated as an explanation for the racial disparities in smoking-associated diseases.

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A NEW TOOL TO FACILITATE SMOKING CESSATION IN PRIMARY CARE CLINICS IN MEXICO.

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BACKGROUND: Although 70% of Mexican smokers report certain interest in quitting smoking, 40% are not planning to quit in the next six months and another 40% have no plans to quit in the next month. OBJECTIVE: To evaluate the use of a smoking cessation software to motivate all smokers to develop a quit plan using medication and counseling in the context of public health care system in Mexico. METHODS: We adapted and customize an existing tablet-based software considering the smoker’s characteristics and tobacco cessation services in Mexico. It contained narrated messages and videos about the benefits of quitting smoking, tobacco cessation medications and assessments of physical and psychological tobacco dependence tested in Brazil and Mexico. Two tablets were set at the main entrance of a primary care clinic. Participants (n=164) were recruited using announcements and brochures. Each tablet was connected to a printer and after each session, two sheets were printed: one for the smoker and one for the clinician. RESULTS: The mean age of the participants was 49.6 years (SD 15.1), 51.8% were women, 83.5% were daily smokers and 63.4% wanted to quit in the next year. Most participants were light smokers 9.6 (SD 6.5), 43.1% smoked between 6 to 10 cigarettes per day and 65% had previously attempted to quit. Only 13.4% had received some professional help to quit, and 35% had received advice from a health professional to quit in the last 12 months. Most participants showed great interest in quitting and 67.1% felt very capable to quit. The main motivations to quit were health (72.0%) and family (14.6%). The mean Fagerström dependence score was 3.0 (SD 2.5). Previous use of smoking medications was 17.1%. Three weeks after completing the tablet program, 16% attended a smoking cessation program, 19% quit and 95% would recommend the tool to a friend to quit smoking. CONCLUSION: The implementation of this tool in primary care in Mexico means a change in the paradigm by engaging unmotivated smokers in a software-assisted quit. Basically it would help increase demand for smoking cessation treatment by smokers and improve the provision services by health care professionals.

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SMOKEFREE LAWS AND HAZARDOUS DRINKING: A CROSS-SECTIONAL STUDY AMONG U.S. ADULTS

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INTRODUCTION: Tobacco and alcohol use are strongly associated behaviors. Smokefree laws reduce smoking prevalence and cigarette consumption, but knowledge on smokefree laws’ effect on alcohol use is limited. We examined the association between smokefree law coverage and hazardous drinking behaviors among US adults. METHODS: Cross-sectional analyses among a population-based sample of US adults using 2009 National Health Interview Survey data, American Nonsmokers’ Rights Foundation U.S. Tobacco Control Laws Database, and US Census Population Estimates. Multivariable logistic regression models examined the association between smokefree law coverage (combining work-
places, restaurants, and bars) and smokefree bar law coverage (alone) with two measures of hazardous drinking (heavy drinking and binge drinking) among (1) current drinkers (N=17,057) and (2) current drinking smokers (n=4074), controlling for sociodemographics and current smoking. RESULTS: Smokefree law coverage was not associated with heavy drinking (OR=1.22, 95% CI=0.99-1.50, P=0.055) or binge drinking (OR=1.09, 95% CI=0.93-1.26, P=0.281) among current drinkers. Among current drinking smokers, smokefree law coverage was unrelated to heavy drinking (OR=1.11, 95% CI=0.84-1.48, P=0.453) or binge drinking (OR=1.14, 95% CI=0.89-1.46, P=0.294). Similarly, smokefree bar law coverage was unrelated to the two hazardous drinking outcomes. CONCLUSIONS: Smokefree law coverage was not associated with hazardous drinking, providing further evidence that smokefree laws are not associated with increased alcohol consumption.

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POS3-128
RACIAL DIFFERENCES IN POLYTOBACCO USE
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INTRODUCTION: While cigarette smoking has decreased, concurrent use of multiple tobacco products, polytobacco (PT) use, is increasing. Although Native Americans and African Americans use cigarettes more than other races, only a few previous studies have investigated PT use by race. With recent changes in the tobacco climate, including emergent products, such as electronic cigarettes, and the proliferation of smoke-free policies, an updated investigation of PT use by race is needed. This study determined the current extent and patterns of PT use by race. METHODS: Data from the 2012-13 National Adult Tobacco Survey were used. Participants were categorized by number of tobacco products used, as well as, by type of tobacco products used.Weighted frequencies and logistic regression analyses were conducted using SAS 9.3. Associations were assessed using adjusted odds ratios (aOR) and 95% confidence intervals (CI). RESULTS: PT use was more common among Native Americans (13.0%), followed by Whites (7.5%), Blacks (6.6%), Hispanics (5.4%), and Asians (4.9%). After adjusting for age, gender and education the odds of PT use among Native Americans was three times higher (aOR: 3.1, 95% CI: 2.4, 4.0) and among Whites was 63% higher (aOR: 1.63, 95% CI: 1.3, 2.0) than African Americans. PT use was more common among cigarette smokers than other tobacco users for all racial groups; however, more Native American smokers used other tobacco products (OTPs) (38.1%) while more Asian non-cigarette smokers used OTPs (22.7%) than other racial groups. Among PT users, more Hispanics (20.3%) and Native Americans (27.9%) used three or more tobacco products compared to Whites (23.9%) and African Americans (11.7%). Types of PT use also differed by race with 46.8% of African Americans using cigarettes and cigars and 33.4% of Whites using cigarettes and e-cigarettes. PT use in Native Americans and Hispanics was more evenly distributed across a range of product combinations. CONCLUSIONS: PT use differs by race in the amount and the types of tobacco products used. Understanding racial differences in PT use will help guide improved surveillance, cessation intervention, and tobacco control strategies.

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POS3-129
TOBACCO USE, EXPOSURE TO SECONDHAND SMOKE, AND CESSATION COUNSELING AMONG HEALTH PROFESSIONAL STUDENTS IN TARGU MURES, ROMANIA IN 2014
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BACKGROUND: The World Health Organization, Centers for Disease Control and the Canadian Public Health Association launched the first international study to evaluate smoking and exposure to secondhand smoke among health professional students called the global Health Professions Student Survey (GHPPSS). Romania participated in the GHPPSS in 2010, but data have not been released. Our study’s aim was to evaluate smoking, secondhand smoke exposure, and cessation training among Romanian health profession students (2013-4) to inform a “Smoke-Free University”. METHODS: We conducted a cross-sectional of health professions students from the University of Medicine and Pharmacy, Targu Mures, Romania (n=3,021). We used the GHPPSS to assess correlates of tobacco-related attitudes and experiences among students during their six-year course of study. Bivariate correlations using SPSS were calculated to determine risk factors associated with smoking, SHS exposure, and experience with training on evidence-based strategies to promote cessation. RESULTS: Respondents were 71.3% female and 28.7% male and represented 76% of the total population of students. Smoking prevalence increased over time: 33% in the 3rd year and 40% in the 6th year. Prevalence by gender increased from 36.9% to 44.8% in male students and from 39.5 to 37.1% in female students between the 3rd and 6th year. 68.8% of smokers wanting to stop smoking. 40% reported being exposure to SHS at home 80% in public spaces. While more than 90% of students believe that they are role models in the society and that they should trained in smoking cessation, only 26.2% reported being trained among 6th years students. CONCLUSION: Our data demonstrate that a more robust effort needs to focus on the primary prevention and cessation among health professional students, as well as a better integrated training mechanism to ensure they are prepared to treat nicotine addiction post-graduation.

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POS3-130
ESTABLISHING A VALID MODEL TO ESTIMATE THE IMPACT OF INTRODUCING A REDUCED RISK PRODUCT ON THE POPULATION AS A WHOLE
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PMI is working on developing product with the potential to reduce individual risk and population harm in comparison to smoking combustible cigarettes (RRPs). To quantify the effects that marketing such products may have on the health of the population as a whole, we have developed a Population Health Impact Model (PHIM). The model uses publicly available smoking prevalence data and estimates of the relative exposure from the RRPs as compared to combustible cigarettes (CCs) and smoking cessation. By comparing smoking-attributable deaths with and without the introduction of an RRP, the model estimates the reduction in smoking-attributable mortality associated with the introduction of the RRP. To assess the performance of the PHIM, it was verified by testing that the assumptions were correctly implemented, and then it was validated, by testing if the assumptions are reasonable with respect to the real population mortality rates. The model was evaluated by comparing the simulation results to the published estimates and projections for the US population from 1990 to 2009, estimating the attributable deaths for the age range of 30-79 years. PHIM projections are consistent with the US population data, in terms of the distribution of smoking habits compared to the International Smoking Statistics estimates of current and former smoking prevalence by sex, age and year. The proportion of deaths due to smoking were consistent with the 2014 US Surgeon General Report, even though the proportion of lung cancer and COPD deaths projected from the PHIM were lower than the estimates reported in the literature. It was noted that the relative risk estimate from the American Cancer Society CPS-II prospective study were unusually high compared to the RR's we derived from extensive meta-analyses. Our model accounts for a variety of tobacco use behaviors and the risks associated with different patterns of tobacco product use. As such, it can evaluate the population health impact associated with the introduction of an RRP as it incorporates different scenarios of product use that may emerge, including dual use.

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POS3-131
THE EFFECT OF POPULATION AGEING AND THE INCREASED SHARE OF HIGHER EDUCATED ON AGGREGATED SMOKING PREVALENCE: A COUNTERFACTUAL ANALYSIS OF DAILY SMOKING IN NORWAY, 1976 TO 2010

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BACKGROUND: The marked decline in smoking over the last decades is often described as a public health success. Through tobacco control measures and an increasing number of smokers, smoking has become expensive, unhealthy, and uncool. This, in turn, has led to changes in smoking behavior, both through increased smoking cessation and decreased smoking uptake. However, certain demographic processes may also affect the aggregated level of smoking. This paper will examine two such processes: 1) population ageing and 2) the increased share of higher educated over time. METHODS: We calculated age, period and cohort (APC) effects on daily smoking among men and women separately using a generalized linear model. The APC-identification problem was avoided by normalizing the period effects as suggested by Deaton. Data came from annual (1976-2010) cross sectional surveys of smoking among adults (25-69 years) in Norway and was aggregated across year, age, gender and education (higher vs. all other). Using model estimates and population data, we examined three counterfactual scenarios: the fraction of men and women who smoked in each year when 1) the age distribution, 2) the distribution of higher education and 3) the distribution of smoking were frozen to the levels in 1976. This was compared to the predicted probabilities of smoking (Pr(S)) from the model. RESULTS: Pr(S) decreased from .45 to .20 among men and from .33 to .20 among women from 1976 to 2010. If the age structure had been identical over time, Pr(S) had been 5 points lower among both men and women. If the fraction of higher educated had been identical, Pr(S) had been 4 points higher among women and 2 points higher among men. Lastly, if the smoking prevalence in all age groups and survey years had been identical across time, Pr(S) would be 32 points higher among men and 14 points higher among women and 2 points higher among men. CONCLUSION: Pr(S) would be marginally higher if the fraction of higher educated had been constant and marginally lower if the age distribution had been constant. Variations in the distribution of smoking over time was much more important and smoking would have been much more prevalent if this had remained constant.

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POS3-132
HIGH SCHOOL STUDENTS IN THE UNITED STATES, WHO USE MULTIPLE TOBACCO PRODUCTS, ARE AT INCREASED RISK FOR OTHER SUBSTANCE USE AND ALCOHOL RELATED BEHAVIORS

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OBJECTIVE: The purpose of this study was to identify if students who use one tobacco product or multiple tobacco products were at increased risk for other alcohol and drug-related behaviors, in a nationally representative sample of U.S. high-school students. METHODS: Data from the 2013 Youth Risk Behavior Survey (YRBS) were analyzed to determine the prevalence of risky behaviors -- in all high school students, and with students who use 0 tobacco products, 1 tobacco product, or at least 2 tobacco products. Odds ratios for other substance use and alcohol related behaviors were calculated, adjusted for sex, grade, and race/ethnicity. The tobacco products included in the YRBS are cigarettes, cigars (including little cigars and cigarillos), and smokeless tobacco. RESULTS: 23% of the sample used tobacco products, with 10% of students reporting current use of at least two tobacco products. The most common other risk behaviors of current tobacco users were marijuana and alcohol use behaviors. Students who used one tobacco product and multiple tobacco products were significantly more likely to engage in all risk behaviors than students who used 0 tobacco products. Students who used one tobacco product or at least 2 tobacco products are at increased risk to engage in other substance use and alcohol related behaviors. While new and emerging tobacco products aren’t included in this study, these results suggest that the more products students use, their risk for other risky behaviors may also increase.

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POS3-133
NICOTINE ADDICTION SEVERITY ASSOCIATED WITH REDUCED SLEEP QUANTITY, MEDIATED BY TRUNCATED SLEEP

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Sleep is disrupted in smokers in a myriad ways; smokers are more likely than non-smokers to report greater difficulty falling asleep, more waking at night, and fewer hours of sleep. The majority of the extant literature on smoking and sleep disturbance has focused on the many confounding differences between smokers and non-smokers. In contrast, this study characterizes-- in smokers only -- the relationships between nicotine addiction and sleep duration. The current study examined the potential sleep-related mechanisms linking time to first cigarettes (TTFC), an indicator of nicotine addiction, sleep duration, and daytime functioning among a nationally-representative sample of smokers obtained from the 2005-2006 and 2007-2008 NHANES survey. We hypothesized that smokers who report an earlier TTFC will experience a greater degree of sleep disturbance than those who delay smoking the first cigarette of day, and that these disturbances will both reduce sleep duration and impair next-day functioning. Understanding more about the sleep and addiction severity relationship will allow for the development of potentially novel therapeutics and for behavioral strategies for addressing nicotine addiction. A total of 2,015 daily smokers were included multiple mediation models examining the mediating effects of 3 indicators of sleep disturbances (latency to fall asleep in minutes, waking in the night, and waking too早 in the morning) on the relationship between nicotine addiction (TTFC) and sleep quantity (hours slept). Models controlled for several factors relating to sleep and smoking, including age, gender, depression, alcohol use and smoking history. In the overall model nicotine dependence (TTFC) was associated with sleep quantity, p < .001; adjusted R² = .15. This association was mediated by only one proposed mediator, ‘waking too early’, p = .007. These findings, and additional results to be presented, demonstrate that more addicted smokers, as indicated by an earlier TTFC, experience fewer hours of sleep than those who wait longer after waking to smoke. Moreover, the results suggest that this reduction in hours slept is likely due to waking up too early rather than by difficulties falling asleep or waking during the night. Implications for further research and clinical intervention will be discussed.

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POS3-134
E-CIGARETTE USE FREQUENCY AND SMOKING CESSION IN A PROSPECTIVE COHORT

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BACKGROUND: A key question for evaluating the net potential benefit/harm of e-cigarettes is the extent to which they support or undermine cigarette smoking cessation. In a recent paper we argued that differentiating regular users from casual users unlikely to continue use could help elucidate that question. METHOD: The 2014 Minnesota Adult Tobacco Survey (MATS) created a statewide representative sample of adults (N=9304). We created a prospective cohort from a subsample of respondents. All current cigarette smokers and former smokers who had quit within two years were invited to participate. Response rate was 50%; final cohort included 601 adults. Cohort respondents were categorized by e-cigarette use at...
the time of MATS 2014 (T1): never users, past users, infrequent users (1-5 days in past 30), intermediate users (6-29 days), and daily users (30 days). Analysis of current smokers included only those who reported making at least one quit attempt during the year preceding T1 (49% of current smokers). RESULTS: Among current smokers at T1 with a quit attempt, 35% had never used e-cigarettes, 38% were past users, 16% were infrequent users, 8% were intermediate users, and 3% were daily users as of T1. Within those groups, 30 day abstinence from cigarettes at T2 was highest for daily users (29%), lowest for intermediate users (6%), 18% for infrequent users, and 17% for never users. Among former smokers at T1, 30 day abstinence from cigarettes at T2 was highest for daily users (87%), lowest for intermediate (33%) and infrequent users (40%), and 73% for never users. CONCLUSIONS: The small sample size of the cohort, as well as potential selection bias, warrant caution in interpretation. Nonetheless, these results suggest a complicated relationship between e-cigarette use and cigarette smoking cessation. Daily use was associated with higher cigarette abstinence rates compared to never users, but infrequent and intermediate use were associated with lower abstinence rates compared to never users. Research should continue to investigate associations of e-cigarette use patterns with cigarette cessation.

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**POS3-135**

**CHARACTERISTICS OF SMOKERS PURCHASING E-CIGARETTES AND THE ASSOCIATION WITH CESSATION: AN EXAMINATION USING A CONSUMER PANEL**

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Whether e-cigarettes impact cessation—either positively or negatively—is a critical question that must be answered to inform policy and practice. We used the Nielsen Homescan panel from 2011 to 2013, augmented with state-specific measures of tobacco control activities, to examine 1) predictors of single and repeat e-cigarette purchasing among panelists currently purchasing cigarettes; and 2) predictors, particularly e-cigarette purchasing, of ‘cessation’ (defined as no purchases for at least 6 months and no subsequent purchases until the end of 2013). We restricted the sample to households purchasing at least four cigarette packs, purchasing at least once in 2011 and once afterward, and consistently purchasing cigarettes, leaving a sample of 2907 households. Potential predictors/ covariates included sociodemographics (age, race, income), smoking intensity (volume/month, days between purchases, recency of last purchase gleaned from 2011 purchases), conventional nicotine replacement therapy (NRT) purchasing, and tobacco control environment (cigarette taxes, smoking bans, tobacco control Funding). In 2012 or 2013, 3.99% made a single e-cigarette purchase, and 4.82% made repeat purchases. Multivariable analyses indicated that, compared to non-e-cigarette purchasers, single purchasers were more likely to be single males (p=0.051), while repeat purchasers smoked less costly cigarette brands (p=0.030) and had fewer days between cigarette purchases (p=0.013). Cigarette volume was correlated with single e-cigarette purchase (p=0.040) and marginally with repeat purchase (p=0.077). Cessation rates were 18.07% in non-e-cigarette purchasers, 11.21% in single purchasers, and 22.14% in repeat purchasers. Multivariable analysis revealed that repeat e-cigarette purchasing (p=0.010) and repeat NRT purchasing (p=0.007) predicted cessation. Single purchase of either did not. In conclusion, purchase of e-cigarettes may show promise for cessation, as repeat purchase of either e-cigarettes or NRT predicted cessation. Further work needs to be done to understand the role of e-cigarette use in cessation.

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**POS3-136**

**MEDIAN AGE OF CIGARETTE SMOKING INITIATION AMONG FOUR RACIAL/ETHNIC GROUPS OF U.S. ADULTS, 2012-2014**

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INTRODUCTION: While racial/ethnic differences in current cigarette smoking among youth is well documented, less is known about differences in smoking initiation. We examined median age of smoking initiation among non-Hispanic whites (NHW), non-Hispanic Blacks (NHB), Hispanics, and non-Hispanic Asians (NHA) in a nationally representative sample of U.S. adults. METHODS: Data came from the 2012-2013 (n=60,192) and 2013-2014 (n=75,233) National Adult Tobacco Surveys, a landline and cellular telephone survey of U.S. adults aged ≥18 years, restricting to respondents who reported smoking 100 cigarettes or more in their lifetimes. The 2012-2013 and 2013-2014 surveys were pooled to increase sample size for race/ethnic-specific analyses among NHW (99,579), NHB (10,366), Hispanics (10,366), and Asians (3,382). To address non-smokers (trajectoy 0), five trajectories of smokers emerged: early established smokers (trajectory 1), late quitters, experimenters, or late escalators. These meaningful differences in smoking behaviors and other important risk factors. Mean years smoked in the past 30), intermediate users (6-29 days), and daily users (30 days). Analysis of currentsmokers included only those who reported making at least one quit attempt during the year preceding T1 (49% of current smokers). RESULTS: Among current smokers at T1 with a quit attempt, 35% had never used e-cigarettes, 38% were past users, 16% were infrequent users, 8% were intermediate users, and 3% were daily users as of T1. Within those groups, 30 day abstinence from cigarettes at T2 was highest for daily users (29%), lowest for intermediate users (6%), 18% for infrequent users, and 17% for never users. Among former smokers at T1, 30 day abstinence from cigarettes at T2 was highest for daily users (87%), lowest for intermediate (33%) and infrequent users (40%), and 73% for never users. CONCLUSIONS: The small sample size of the cohort, as well as potential selection bias, warrant caution in interpretation. Nonetheless, these results suggest a complicated relationship between e-cigarette use and cigarette smoking cessation. Daily use was associated with higher cigarette abstinence rates compared to never users, but infrequent and intermediate use were associated with lower abstinence rates compared to never users. Research should continue to investigate associations of e-cigarette use patterns with cigarette cessation.

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**POS3-137**

**TRAJECTORIES OF CIGARETTE SMOKING USING FIFTEEN YEARS OF DATA FROM THE NATIONAL LONGITUDINAL SURVEY OF YOUTH (1997)**

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Although only one-third of those who experiment with cigarettes ever transition to regular smoking, the majority of tobacco control efforts focus on current smokers into two categories: current or former smokers. However, there are between four and five trajectories (or pathways) of smoking behavior over time. This analysis used a negative binomial latent class growth model to identify patterns of smoking behavior between the ages of 16 and 30 among the National Longitudinal Survey of Youth 97 (NLSY97). In addition to never smokers (trajectory 0), five trajectories of smokers emerged: early established smokers (trajectory 1), late quitters (trajectory 2), early quitters (trajectory 3), late escalators (trajectory 4), and experimenters (trajectory 5). The populations in these trajectories had meaningful differences in smoking behaviors and other important risk factors. Mean days smoked in the past month peaked at age 22 for established smokers, age 19 for late quitters, age 16 for early quitters, and age 30 for late escalators. Gender, race, household income, mother’s education, and employment/enrollment status were significant predictors of trajectory membership. Established smokers were more likely to be male than never smokers, early quitters, or experimenters. They were less likely to be Black than never smokers, experimenters, or late escalators and less likely to be Hispanic than members of any of the other trajectories. Established smokers had a lower household income than never smokers, late quitters, early quitters, or experimenters and had mothers with less education than experimenters. They were less likely to be enrolled in school than late quitters, early quitters, experimenters, or late escalators. These meaningful differences in profiles of smokers in the different trajectories have important implication for tobacco control efforts, especially in relation to smoking cessation. Interventions
should promote cessation before age 16 among early established smokers, who are more likely to be male and white with low household income and not enrolled in school, and block smoking initiation in the early 20’s among late escalators, who are more likely to be male, Black or Hispanic with low household income and low mother’s education.

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**POS3-138**

**HOW DO LATINA SMOKERS DIFFER FROM NON-SMOKERS? AN ANALYSIS OF A LOS ANGELES-BASED SAMPLE**

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**BACKGROUND:** Although rates of smoking in the U.S. among Latinas have traditionally been low, they are not insignificant (about 7% smoke). This is especially true among emerging adult Latinas, and those more acculturated. To most effectively design and target interventions towards this group, it is important to understand the unique ways that Latina smokers differ from non-smokers. This study sought to identify sociocultural factors that could distinguish between Latina never smokers, former smokers, and current smokers.

**METHODS:** We conducted a clinic- and community-based survey with 1,632 Latina women in Los Angeles County. This 45-60 minute survey asked participants a variety of questions about their health and about potential risk factors. We use discriminant analysis to examine how Latina current smokers, former smokers, and never smokers differ on several sociocultural factors: one’s country of birth, acculturation to the US, religiosity, fatalistic beliefs, health literacy, education, income, age and maternal status.

Current smokers were those who had smoked every day for at least 6 months and were currently now smoking; former smokers had smoked every day for at least 6 months and were not currently smoking. RESULTS: Latina never, former, and current smokers vary on several factors. Current smokers were more likely to be born in the US (37%) than former (29%) and never (19%) smokers (p < .001). Current smokers were marginally less likely (p = .059) to be born in Mexico (46%) than former (52%) and never (58%) smokers. Current smokers had higher levels of acculturation to the US than former and never smokers (2.83 vs. 2.63 vs. 2.3, respectively, p < .001) and lower levels of religiosity (1.55 vs. 2.38 vs. 2.34, respectively, p < .001). CONCLUSIONS: Understanding the sociocultural factors that distinguish Latina current, former, and never smokers from each other can help practitioners identify key target populations and inform the development of successful prevention and cessation interventions.

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**POS3-139**

**A NEW LENS ON THE CHANGES IN YOUTH TOBACCO USE: ZOOMING IN ON SINGLE, DUAL, AND POLY TOBACCO USERS**

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Decline in tobacco use prevalence among US Middle and High School youth between 2012 and 2013 (National Youth Tobacco Survey, NYTS), stirred excitement and debate. Controversial findings among high school students centered on decreased cigarette smoking (from 14.0% to 12.7%), increased electronic cigarette use (from 2.8% to 4.5%), and increased use of more than one product (from 9.9% to 12.6%). Our previous research (Ali et al., 2015) demonstrated the importance of forming distinct risk profiles of single, dual, and poly tobacco use, defined as use of only one, any two, and any three or more products. The present study applied this methodology to illuminate changes between 2012 and 2013. 2012 (n=24,658) and 2013 NYTS (n=18,406) data were analyzed using mutually exclusive categories of single, dual, and poly tobacco use in the last 30 days. The same psychosocial factors and twelve tobacco products were analyzed with the addition of flavored cigarettes and cigars in 2013. Multinomial logistic regression facilitated risk profile comparison. In 2012 (n=5,030), the majority of tobacco using youth reported poly use (55.9%), followed by single (28.0%), and dual use (16.1%). 2013 saw the same trend of tobacco using youth (n=4,009) reporting high poly use (53.5%), followed by single (29.2%) and dual use (17.2%). 2012 and 2013 multivariate models showed higher levels of nicotine dependence among poly users compared to single (2012 RR=3.19, p<0.001; 2013 2.32, p<0.001) and dual users (2012 2.52, p<0.001; 2013 1.62, p<0.05). In 2012, compared to dual users, poly users were more likely to be male, Hispanic, nicotine dependent, influenced by peer cigarette offers, and less likely to be black, have quit intentions, and believe secondhand smoke causes a lot of harm. In 2013, gender, race, dependence, and peer influence held. Quit intention and harm perception findings were no longer significant. The concurrent use of multiple tobacco and nicotine delivery products is a relatively new phenomenon that necessitates a different lens for tobacco control and focused risk assessments to inform tailored interventions for distinct types of tobacco users.

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**POS3-140**

**EFFECTS OF EXPOSURE TO GRAPHIC WARNING LABELS WITH GAIN AND LOSS MESSAGE FRAMING AND WITH AND WITHOUT A SELF-EFFICACY MESSAGE**

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**INTRODUCTION:** A growing body of literature suggests that graphic warnings on cigarette packages are effective in changing smokers’ attitudes and beliefs and motivating quitting behavior. The graphic warning labels proposed by the U.S. Food and Drug Administration (FDA) contain predominantly loss-framed messaging. However, it has been suggested that additional health benefits may be achieved from gain-framed messages and from adding a message designed to enhance self-efficacy to quit. METHODS: A two-session web-based study was conducted with adult smokers (N=140). During the first session, demographics, smoking behavior, and baseline attitude toward smoking, desire to quit, and self-efficacy to quit were assessed. The second session contained random assignment to viewing one of four sets of cigarette packages, all with the proposed FDA graphic images: (1) packages with the proposed loss-framed warnings, (2) packages with the loss-framed warnings plus a self-efficacy message, (3) packages with gain-framed warnings, or (4) packages with gain-framed warnings plus a self-efficacy message, and post-exposure measures. MANCOVA was conducted to test the effect of package condition on attitude toward smoking, desire to quit, and self-efficacy to quit, controlling for baseline levels of these measures. RESULTS: There was a significant multivariate effect of package condition on the dependent variables included in the MANCOVA (p=.022). In the univariate analyses, there were significant effects on attitude toward smoking (p=.017) and desire to quit (p=.046). In the pairwise comparisons, the participants assigned to view the packages with the loss-framed warnings plus a self-efficacy message had the most negative attitude toward smoking, greatest desire to quit, and greatest self-efficacy to quit. CONCLUSIONS: These findings suggest that adding a self-efficacy message to loss-framed warnings on cigarette packages might be effective in influencing factors related to quitting smoking.

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POS3-141
PATTERNS OF EXCLUSIVE AND COMBINED CIGAR AND BLUNT USE AMONG YOUTH AND YOUNG ADULTS BY RACE/ETHNICITY: TRENDS FROM 2004-2013
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INTRODUCTION: Blunt users remove all or most of the tobacco from cigars and replace it with marijuana. Cigar use and blunt use are closely associated, but distinct behaviors. To explore patterns of cigar and blunt use, we assessed trends in exclusive and combined past 30-day cigar and blunt use by race/ethnicity and age group among youth and youth adults using data from the 2004–2013 National Survey on Drug Use and Health. METHODS: The following mutually exclusive use categories were assessed: exclusive cigar use (used a cigar but none containing marijuana); combined cigar and blunt use (used cigars with and without marijuana in them); and exclusive blunt use (used only cigars containing marijuana); combined cigar and blunt use (used cigars with and without marijuana in them); and exclusive blunt use (used only cigars containing marijuana). We compared trends in these categories among 334,300 youth (12-17) and young adults (18-25) who self-identified as non-Hispanic (NH) White, NH Black, or Hispanic. We used orthogonal polynomials to test for trends; p<0.05 was considered statistically significant. RESULTS: During 2004-2013, there were significant declines in exclusive cigar use among NH White (3.6%-1.7%), NH Black (1.6%-0.6%) and Hispanic (2.0%-0.8%) youth, as well as among NH White (9.9%-8.2%), NH Black (8.3%-5.8%), and Hispanic (7.4%-4.8%) young adults. There were no significant changes in prevalence of combined cigar and blunt use among any of the assessed groups. There were significant increases in exclusive blunt use among NH White (2.5%-3.0%), NH Black (3.7%-4.0%), and Hispanic (2.4%-3.2%) youth, as well as among NH White (5.7%-7.7%), NH Black (9.8%-10.3%), and Hispanic (3.5%-7.8%) young adults. DISCUSSION: Despite significant declines in exclusive cigar use among NH White, NH Black, and Hispanic young and young adults during 2004-2013, exclusive blunt use significantly increased among these population groups during the same period. Public health efforts to prevent and reduce tobacco use may be strengthened by giving greater consideration to a growing population of exclusive blunt users, as this behavior has been associated with tobacco experimentation and initiation.

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POS3-142
DABBING WITH E-CIGARETTES: NATIONAL RATES AND PREDICTORS OF DISCONTINUED USE
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BACKGROUND: Although e-cigarette use has increased, many adults who tried e-cigarettes are not current users. This study examines reasons for initiating and discontinuing use. DESIGN/METHODS: Respondents were recruited from a nationally representative dual-frame sample in 2014. Adults who had tried e-cigarettes and had discontinued use were asked about potential reasons for initiating and discontinuing use. Chi-square analyses compared endorses of reasons for initiating use among current and former e-cigarette users. RESULTS: Overall, 2011(13.4%) had tried e-cigarettes, 64.1% of whom discontinued use. Most former users reported using e-cigarettes 10 or fewer times (74.8%). Former users were less likely than continuing users to endorse the following reasons for initiation: e-cigarettes are affordable (24.6% vs. 66.2%), can use e-cigarettes where cigarettes are not allowed (53.2% vs. 75.0%), might be less harmful to me than cigarettes (57.4% vs. 82.7%), might be less harmful to others than cigarettes (56.5% vs. 88.5%), might help with cessation (51.1% vs. 75.0%), and might be more acceptable to non-tobacco users (55.7% vs. 79.1%) (p<0.05 for all comparisons.) Former users expressed the following reasons for discontinuing use: just curious to try them, had no desire to continue (84.5%), not satisfying (54.2%), too much hassle (45.6%), look silly (29.5%), and, cost too much (48.5%). Conclusion: Two-thirds of adults who have tried e-cigarettes no longer use them, and most used them only a few times. It appears that many people who try e-cigarettes do so out of curiosity, rather than having an interest in harm reduction or circumventing smoking bans.

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POS3-143
YOUNG ADULTS’ MENTHOL CIGARETTE PERCEPTIONS, EXPERIENCES, AND USE INTENTIONS
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BACKGROUND: Menthol cigarettes are disproportionately used by young people and concerns have been raised about their role as smoking “starter products”. However, there has been limited qualitative research aimed at understanding how and why young people begin using menthol cigarettes and their perceptions about them, with much of it based on reviews of the tobacco industry’s own research, consisting of largely older studies. METHODS: We conducted six focus groups with young adult (ages 18-24) menthol smokers in New Jersey between December 2014 and March 2015; three of which were specifically with African American menthol smokers. Participants were asked open-ended questions about their menthol smoking initiation, preference reasons, brand perceptions and risk perceptions. Participants were also asked about their awareness of potential regulatory action on menthol cigarettes and what they might do if menthol cigarettes were no longer available. RESULTS: Participants’ introduction to menthol cigarettes was largely influenced by what their friends smoked, though several also had menthol smoking family members. Many also knew where they could purchase single cigarettes, typically for Newport. Participants’ preference for menthol was largely based on taste, perceived smoothness, reduced harshness, and better satisfaction, although for some, the familiarity and prevalence of menthol smoking and brands amongst their friends or communities also seemed influential. For many, menthol cigarettes were the first type of cigarettes they had ever tried. Participants expressed perceptions about the taste, strength, risks and users of different menthol brands, including new brand Camel Crush, which was perceived to be especially minty, fun, and attractive for newer smokers. Few had heard about a potential ban on menthol cigarettes, but several acknowledged that this would likely help them quit smoking, as they largely did not have interest in switching to non-mentholated cigarettes (though some would tolerate non-menthol cigarettes when drinking). CONCLUSIONS: The FDA should continue to pursue regulating menthol cigarettes to prevent and reduce smoking among young people.

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POS3-144
EXPOSURE TO SECONDHAND SMOKE AMONG FOSTER CARE RESIDENTS IN ROMANIA
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BACKGROUND: Children living in disadvantaged social circumstances are more likely to be exposed to secondhand smoke (SHS). This is the first study that describes the correlates of SHS exposure among residents of the Romania’s Child Protection Authority. METHODS: We conducted in-person, cross-sectional surveys with 918 residents (~18 years) in 153 foster homes in five Transylvanian counties. Children were asked had they ever seen someone smoking in the home
and how often they observed smoking in the home in confined spaces. We as-
alyzed the relationships among the age and gender of child, type of family care
home, and years in residence in the foster care home in relation to SHS exposure
in the home. RESULTS: 35% said that they had ever seen someone smoking in
the home, while 12.4% reported that they observed smoking in confined space.
More than half of the children who reported observing smoking in confined spaces
say that they observe the behavior “rather frequently” or “usually.” Older children
were more likely to report ever having observed smoking in the home (14.3 years vs.
12.9 years, p < .001). Likewise, more time in the foster care home and living in
a home that offered more complex services (vs. a family care home) were sig-
nificantly correlated with greater likelihood of having ever been exposed to SHS.
There were no differences in exposure in confined spaces by respondent age,
gender, length of time in foster care, and type of foster care home. CONCLU-
sION: About 1 in 3 children report having ever been exposed to SHS in the homes
of the Romanian Children’s Protection Authority, while 1 in 10 children report ex-
posure in confined spaces. These homes are protected by national laws and lo-
cal policies that forbid smoking indoors. Better enforcement at the local level is
needed to ensure the health of foster care children, which should be reinforced by
national clean air laws that reduce SHS exposure to all children.

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POS3-145
E-CIGARETTE FLAVORS AND SMOKING CESSATION: FINDINGS
FROM A NATIONAL SURVEY
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E-cigarettes are available in a myriad of flavors. This complicates the regulation
of e-cigarettes. What little is known about flavor preferences has come pri-
marily from convenience samples of the dedicated “vaper” community, which shows
that “fruit” is the top choice. This study used a nationally representative sample
of US adults to examine the relationship between e-cigarette flavor preference
and smoking cessation. An online survey was conducted in March 2014 using
GfK KnowledgePanel. Among the 955 e-cigarette users, the most popular flavors
were those found in standard cigarettes: tobacco (34.2%), menthol (18.8%), and
tobacco-menthol mix (2.8%); 11.3% had no favorite flavor. Preference for tobacco
flavors increased with age. Women were more likely to prefer menthol flavor than
men (26.1% vs. 15.4%). Non-Hispanic Blacks were more likely to prefer men-
thol flavor (49.7%) than other ethnicities, while Non-Hispanic Whites were more
likely to prefer tobacco flavor (47.1%). Smokers who preferred e-cigarettes with
non-tobacco flavors were more likely to make a quit attempt than those who pre-
ferred tobacco flavors (70.8% vs. 58.1%, P < .05), and more likely to have quit
for 3 months or more (10.7% vs. 4.6%, P < .05). That preference for non-tobacco
flavors is associated with quitting combustible cigarettes cautions against an over-
ly-strict regulatory approach to e-cigarettes.

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POS3-146
DOES HIGH TOBACCO CONSUMPTION CAUSE PSYCHOLOGICAL
DISTRESS? A Mendelian Randomisation Study
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INTRODUCTION: Many smokers attribute their smoking to regulating emotions
and relieving stress. Smoking has however been shown to increase basal levels
of cortisol and long-term smoking and nicotine dependence is suspected to cause
dysregulation of stress hormones. The aim of the study was to investigate whether
high tobacco consumption is causally related to experiencing psychological dis-
trust. To test this hypothesis we used a mendelian randomisation design where a
polymorphism in the CHRNA3 gene cluster (rs1051730) is used as a proxy for high
tobacco consumption. This genotype is known to influence tobacco consumption
but in contrast to tobacco consumption per se it is randomly distributed in the pop-
ulation. METHODS: We used data from 90,106 participants in the Copenhagen
General Population study. Exposures included self-reported smoking intensity
in cigarettes/day and pack years and the CHRNA3 rs1051730 genotype as proxy for
tobacco consumption. Three dimensions of psychological distress were studied:
Stress (do you often feel nervous or stressed?), fatigue (do you have the feeling
that you have not accomplished very much recently?), and hopelessness (do you
feel like giving up?). RESULTS: Smoking intensity was associated with all three
dimensions of psychological distress in multivariate analyses. Among participants
smoking 30 cigarettes per day or more, the odds ratio of being nervous or stressed
was 1.67 (95% CI 1.47-1.89) compared to never smokers. Corresponding odds
ratios for fatigue and hopelessness were 2.18 (95% CI 1.92-2.47) and 3.08 (95%
CI 2.52-3.62). However, the CHRNA3 genotype was unassociated with psycholog-
ical distress among current, former and never smokers. For instance among cur-
rent smokers, the odds-ratio for stress was 1.02 (0.91-1.15) among homozygotes
compared to non-carriers of the CHRNA3 genotype. CONCLUSIONS: Though
a strong association between smoking intensity and psychological distress was
found there was no indication that this association is causal. This favours the ex-
planations that psychological distress cause people to smoke more or that psycho-
logical distress and smoking have common causes.

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POS3-147
REAL WORLD EVALUATION OF SECOND GENERATION
ELECTRONIC CIGARETTE BATTERIES
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The ability of an electronic cigarette (EC) to deliver expected power can influ-
ence user’s choice of vaping device. There is growing evidence that EC nic-
tine delivery, user satisfaction, carbonyl formation and respiratory tract deposition
are driven by vaping power. The objective of this study was to investigate the
performance of variable voltage EC batteries under realistic use conditions. EC
battery voltage was measured at four levels: 3.3, 3.8, 4.3 and 4.8V under no load
and vaping load, in six brands of EC batteries (n=5-18 per battery type). For ‘no
load’ the battery was disconnected from the atomizer, for ‘vaping load’ the battery
was connected to a dual coil atomizer and puffed at 20 mL/s. Battery capacity
range was 800-2000 mAh. Each measurement was repeated in quadruplicate,
randomized using a 4x4 Latin Square. Measured voltages were compared against
indicated voltages to evaluate the performance reliability of the devices. Results
were analyzed using repeated measures ANOVA followed by Tukey’s multiple
pairwise comparison. All measurements were conducted with a NIST traceable
multimeter, accurate to ±0.001 volts. Under no load, measured voltage and indi-
cated voltage were well correlated for all batteries, average R² = 0.998. Significant
differences among EC brands were found (P=0.025), but not practically different
since all mean values were ±5% of indicated voltage. Under vaping load, battery
voltage plateaued around 3.8 volts (9W) for all batteries, demonstrating inability
of these EC batteries to supply indicated voltage at higher power demands, likely
resulting in underperformance. Underperforming ECs could result in lower nicotine
delivery per puff, lower user satisfaction, lower carbonyl production and smaller
than expected particle size distribution. Lower carbonyl production would be more
healthful for the user but lower nicotine delivery and less satisfaction may drive
users toward higher-powered third generation devices or toward switching back
to smoking. Additionally, real-world performance should be considered as we build
prediction models for chemical exposures, lung deposition and abuse liability.

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ter, OK, USA, evan-floyd@ouhsedu
PMI is working on developing product with the potential to reduce individual risk and population harm in comparison to smoking combustible cigarettes (RRPs). To quantify the effects that marketing such products may have on the health of the population as a whole, we have developed a Population Health Impact Model (PHIM). One key parameter of the model is an estimate of the RRP-related reduction of the effective dose of exposure, relative to continued smoking of conventional cigarettes and to cessation (F-factor). By parametrization, its value is 1 if the RRP has an excess risk similar to that of smoking and 0 if the RRP has an excess risk equaling that of smoking cessation. Currently, there is no epidemiological data allowing the direct estimation of the F-factor. Nevertheless, pre-clinical and clinical studies are available and key biomarkers measured during these studies can be used to estimate the difference between levels in subjects switching to RRP and those quitting smoking, relative to the difference between levels in subjects continuing smoking CCs and those quitting. By means of Bayesian statistical methods, the uncertainty related to these relative biomarker level changes (RCs) are estimated as well. Link functions are introduced to translate the various RCs and their uncertainty into the F-factor. Given the lack of knowledge to determine reasonable link functions, a family of link functions was introduced, defined on a parameter space that can be uniformly sampled. Aggregation of the information coming from the different biomarkers is performed by assigning ‘uniform’ weights to them. The method allows obtaining a distribution of potential F-factors, representing various sources of uncertainty, which can be used as input to the PHIM.

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POS3-149 HEALTH EFFECTS OR CONSTITUENTS? LEVERAGING TWO NATIONALLY REPRESENTATIVE SURVEYS TO INFORM A POINT-OF-SALE CAMPAIGN ABOUT NOVEL TOBACCO PRODUCTS

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BACKGROUND: Recently, significant increases in adolescents’ and young adults’ use of electronic nicotine delivery systems (ENDS), little cigars and cigarettes (LCCs), and hookah have been reported. Health communication campaigns conducted at the point-of-sale may be an important tobacco prevention strategy. We sought to identify whether messages for a point-of-sale campaign should focus on health effects of or constituents in the smoke/aerosol of these novel tobacco products.

METHOD: We conducted two nationally-representative phone surveys (young adults N=809; adolescents N=1125). We assessed participants’ level of worry about specific constituents and health effects associated with use of each type of product (ENDS, LCCs, hookah). Participants were classified as current product users, susceptible nonusers, or non-susceptible nonusers. Results are reported for users and susceptible nonusers. RESULTS: Adolescent participants were 49.9% male and 50.2% female. Among adolescents, 43.2% reported worrying ‘a lot’ about health effects and 51% reported worrying ‘a lot’ about constituents. Compared to susceptible nonusers, users generally reported lower levels of worry for both health effects and constituents than susceptible nonusers. For example, 54.5% of young adult susceptible nonusers of hookah worried ‘a lot’ about carbon monoxide poisoning, while only 15.6% of hookah users worried ‘a lot’ about it.

CONCLUSIONS: Young adults and adolescents generally worried more about constituents than health effects of novel tobacco products. Implementing a constituent-focused campaign may help to discourage both adolescent and young adult users and susceptible nonusers from using ENDS, LCCs, and hookah by increasing worry about the chemicals in the product’s smoke/aerosol.

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POS3-150 DISPARITIES IN YOUTH TOBACCO USE AND RELATED BELIEFS BY METROPOLITAN STATUS: FINDINGS FROM FLORIDA AND OHIO

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BACKGROUND: National and state-level data show that rates of smoking are higher in rural areas, compared to metropolitan (metro) areas. It is unclear how use of novel tobacco products (e.g., e-cigarettes) and beliefs about these products among youth vary by metro status. METHODS: We used data from two studies. First, the 2014 Florida Youth Tobacco Survey (n=27560) that classified participants into living in metro/non-metro/rural areas based on the USDA Rural Urban Continuum Code. Second, the Buckeye Teen Health Study (n=359) that sampled boys from Columbus (metro) and rural Appalachian, Ohio (data collected in 2015). Participants were 11-16 years old in both studies. We assessed the variation in tobacco use and related beliefs across metro status, adjusting for race/ethnicity and age. RESULTS: Tobacco use was more prevalent among youth in the rural areas. Boys living in rural Appalachian, Ohio, were more likely than boys living in Columbus to have ever used any tobacco (22.4% vs. 12.4%; AOR=2.04) and ever used smokeless tobacco (12.1% vs. 2.1%; AOR=6.21). Similarly, boys living in non-metro/cultural Florida were more likely than boys living in metro Florida to be currently using cigarettes (rural=8.6%, non-metro=8.1%, metro=4.3%), smokeless tobacco (rural=10.3%, non-metro=10.1%, metro=3.8%), and snus (rural=3.8%, non-metro=3.3%, metro=1.6%). Tobacco use disparities across metro status also varied by product and gender. Florida boys and girls in the metro areas were more likely than those in the non-metro/rural areas to currently use hookah, while no difference in e-cigarette use by metro status were observed in both states and genders. Regarding tobacco-related beliefs, there were no difference in perceived addictiveness of cigarettes, cigars, and e-cigarettes by metro status, but Florida boys and girls in the rural areas were more likely than those in the metro areas to perceive hookah as addictive (p<0.05), which was not observed in the Ohio boys. CONCLUSION: Overall youth tobacco use is more prevalent among rural and non-metro youth than metro youth. Additionally, variation by product, gender, and state in tobacco use behaviors and beliefs were observed.

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POS3-151 USE OF TOBACCO AND TOBACCO CESSATION SERVICES IN URBAN AND RURAL MINNESOTA

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BACKGROUND: While overall population prevalence of tobacco use has steadily declined thanks to sustained tobacco control efforts, tobacco use in some subpopulations remains high. Disparities in tobacco use and tobacco related harm have been studied along many demographic dimensions, however differences between urban and rural residents have received relatively little attention. METHODOLOGY: We used data from two independent data sources to investigate rural-urban differences in tobacco use and utilization of cessation services in Minnesota. The 2014 Minnesota Adult Tobacco Survey (MATS; n=9904) was used to estimate population prevalence for use of various tobacco products. The USDA Urban-Rural Continuum Code for each county was used to categorize respondents as living in a metro (1-3), non-metro (4-6), or rural (7-9) area. In addition, registrations to QUITPLAN...
POS3-152 
VARIATIONS IN TOBACCO RETAILER DENSITY AMONG URBAN AND RURAL PUBLIC SCHOOLS

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Evidence has shown that tobacco retailer density around schools is associated with youth tobacco use. Most research to date is school-centric in focusing on availability of retail tobacco within some arbitrary distance around a school, which fails to capture youth access as it occurs across the entire retail tobacco environment. This study’s primary aim was to construct a density surface to assess the entire retail tobacco environment around public middle schools (MS) and high schools (HS) in the U.S. Secondary aims were to examine differences in 1) tobacco retailer density between MS and HS and 2) density by schools’ level of urbanicity. Retail tobacco availability for each MS (N=16,311) and HS (N=28,953) was assessed using static-bandwidth kernel density estimation. The national density surface was constructed from tobacco retailers (N=327,562) identified by 10 unique retailer codes within a national business directory. An independent-samples t-test assessed density between MS and HS. Two-way fixed effects ANOVA examined effects and interaction between school type and 4 levels of urbanicity (city, suburb, town, and rural). Tobacco retailer density ranged from 0 per sq. mi. to 5.39 per sq. mi. across all MS and HS. Overall, density was significantly higher around MS than HS (Mean=0.62 vs. 0.59, respectively, p<0.001). A significant interaction between school type and urbanicity existed. In cities, HS had significantly higher density than MS (Mean=1.15 vs. 0.98, respectively, p<0.001). In rural areas, MS had significantly higher density than HS (Mean=0.20 vs. 0.15, respectively, p<0.001). No significant differences in density were observed between MS and HS for suburbs or towns. This is the first study that comprehensively assesses retail tobacco availability around schools - finding that density differs by school type and level of urbanicity. Targeted policies to restrict the availability of retail tobacco around youth spaces are needed.

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POS3-153 
EXPOSURE TO AND ENGAGEMENT WITH TOBACCO MARKETING AMONG YOUTH AND ADULT SMOKERS BY METROPOLITAN STATUS

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BACKGROUND: Tobacco use is more prevalent in rural areas. However, little is known about whether exposure to and engagement with tobacco marketing (e.g., point-of-sale advertising, taking advantage of price tiers of cigarette brands) differs by metropolitan status. METHODS: Using data from the 2014 Florida Youth Tobacco Survey (middle school n=36726, high school n=32672), we examined how exposure to tobacco marketing varied by metropolitan status. Additionally, using data from the 2014 Minnesota Adult Tobacco Survey (MATS; current smokers n=650), we assessed the association between metropolitan status and engagement with tobacco marketing. In both studies, participants were classified as living in metropolitan (metro), non-metropolitan (non-metro), and rural areas based on the USDA Rural Urban Continuum Codes. Regression models were adjusted for age, gender, and race/ethnicity. RESULTS: Higher proportion of Florida non-metro and rural students were exposed to tobacco marketing than metro students. In middle schools, compared to metro students, non-metro and rural students were more likely to have seen actors smoked in movies on TV or video; more likely to have seen point-of-sale advertising at convenience stores, gas stations, grocery stores, and big box stores; and more likely to have seen electronic cigarette advertising on TV, on billboards, and in magazines/newspapers (p<0.05). The exposure was even more prevalent among high school students compared to middle school students (p<0.05), with similar associations between the exposure and metropolitan status. Among Minnesota adult smokers, compared to those who lived in metro areas, those who lived in non-metro areas were more likely to have purchased a cheaper brand of cigarettes (AOR=1.51, 95% CI=1.02, 2.23), and those who lived in the rural areas were more likely to have purchased by the carton instead of by the pack to save money in the past 12 months (AOR=1.56, 95% CI=1.02, 2.38). Conclusion: Higher prevalence of exposure to and engagement with tobacco marketing among youth and adults in the non-metro and rural areas than metro areas may explain the disparities in tobacco use by metropolitan status.

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POS3-154 
LET’S BE BLUNT ABOUT IT: CHARACTERIZING DEMOGRAPHIC AND HEALTH-RISK PROFILES OF USERS OF CIGARS, BLUNTS, AND MARIJUANA FROM THE NATIONAL SURVEY OF DRUG USE AND HEALTH

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BACKGROUND: Blunts are used by individuals who are disproportionately impacted by tobacco use outcomes, including those who are younger and Black/African-American. Misreporting blunts and cigar use is also common among these groups. Studies show that blunt users look different than cigar and marijuana users, however few have made the distinction between those using cigars, blunts, and marijuana. This study investigated (a) the prevalence and demographic and substance use correlates of past 30-day cigar, blunts, non-blunt marijuana, and dual use of blunts and cigar; (b) differences across sub-groups on substance use and mental health problems; and (c) factors correlated with misclassification of blunts use. METHOD: Data were from the 2013 National Survey of Drug Use and Health. RESULTS: Multinomial logistic regression models showed that respondents who were younger (12-17 and 18-24 vs 26+), Black, and who used had tobacco, alcohol or other drugs in the past 30-days had the highest odds of being blunt-only or dual users of blunts and cigars, and lowest odds of being cigar-only or marijuana non-blunt users. Of all factors, alcohol use conferred the greatest risk for the dual use group compared to any other group (aOR = 11.57; 95% CI: 7.85-17.06). Differences emerged across the sub-groups in terms of mental health and substance use problems. Depression was most prevalent among non-blunt mari-
POS3-156 MEASURING RISK PERCEPTIONS OF ENDS FROM A BEHAVIORAL HEALTH PERSPECTIVE: LESSONS LEARNED, CURRENT CHALLENGES, AND IMPLICATIONS FOR RESEARCH AND POLICY
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The behavioral risk perception and the health economics literatures present contrasting views of how aware smokers are of the health consequences of their smoking. At the heart of these differences are important measurement issues related to the assessment of deeper internalized knowledge versus superficial awareness or risk; optimism, present, and projection biases; and methodological biases in quantifying risk perceptions. These differences and the underlying measurement issues have important implications for US policy, such as the FDA's consideration of lost consumer surplus as a cost of tobacco regulation, including the regulation of ENDS. In measuring risk/benefit perceptions of ENDS, additional measurement challenges are encountered due to the complex and evolving nature of ENDS products and the widespread uncertainty of their risks. Drawing upon deliberations from the TCORS Measurement Workgroup meeting on ENDS measurement in June 2015 and cross-sectional data from the 2014 and 2015 Tobacco Products and Risk Perceptions Surveys of US adults (n=5171, n=6000), the focus of this talk is on the adaptation of risk perception measures for conventional cigarettes based on Behavior Risk Perception Theory to measure risk perceptions of ENDS. Reported uncertainty of the health risks and addictiveness of ENDS ranged from 30% to 43% of survey respondents, and were highest among current smokers. High levels of uncertainty and that 27% of adult current smokers perceive ENDS to be equally or more harmful than conventional cigarettes may undermine the potential of adult smokers using ENDS to quit conventional cigarettes. In addition to results from detailed probes of uncertainty in perceptions of ENDS, newly collected in the 2015 survey, data will be presented from measures of perceptions of flavors in ENDS, nicotine, and ENDS efficacy for quitting regular cigarettes. Conclusions will focus on ongoing challenges in accurately measuring perceptions of ENDS and the implications for ENDS research and policy, such as for risk messaging, modeling tobacco use transitions, and conducting economic cost-benefits analysis of ENDS regulation.

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POS3-157 ALTERNATIVE NICOTINE DELIVERY SYSTEMS (ANDS) SURVEILLANCE IN THE UK: THE INTERNATIONAL TOBACCO CONTROL UK PROJECT AND OTHER UK SURVEYS
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This presentation will discuss ANDS surveillance measures in the United Kingdom with a focus on ANDS surveillance in the context of policy evaluation, and forthcoming challenges to the surveillance of ANDS in the UK’s rapidly changing market and policy environment. Surveys that monitor ANDS use in the United Kingdom will be briefly outlined including: the Action on Smoking and Health Smokefree GB Youth and Adult Surveys; the International Tobacco Control (ITC) UK Project; Opinions and Lifestyle Survey, the Internet Cohort GB Survey, the Youth and Adult Tobacco Policy Surveys, the English Smoking Toolkit Study, and the EU wide Eurobarometer. Surveillance measures in the context of policy evaluation will be elaborated on, focusing on the ITC Project in the UK and internationally. Challenges to ANDS surveillance will be discussed including intensity of use, dependence, and types and brands of products. Forthcoming ANDS policy changes and the rapidly changing ANDS market in the UK including the European Tobacco Products Directive, the approval of ANDS as licensed medicines by the UK Medicines Healthcare Regulatory Agency, and ANDS and Stop Smoking Services will be discussed in the context of needs for ANDS surveillance.

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POS3-155 DOES CIGAR USE PREDICT MARIJUANA USE AMONG U.S. YOUNG ADULTS? EVIDENCE FROM ADD HEALTH
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BACKGROUND: While cigarette use has declined in the past decade, cigarette consumption more than doubled among adults and is a significant public health concern. Cigars have higher levels of cancer-causing substances than cigarettes and growing evidence demonstrates that patterns of use may differ among African American/black young adults when compared to their Caucasian/white peers. While the use of cigars as blunts to smoke marijuana has been well documented, little is known about the relationship between cigarette and marijuana use. This study examined whether cigar use predicted marijuana use in a national longitudinal dataset of young adult smokers. METHODS: Add Health is a nationally representative sample of U.S. adolescents in grades 7-12 that has been followed since 1994-95. Multiple logistic regression analyses tested whether cigar use predicted marijuana use among black and white young adults using Wave III (2001-2002) and Wave IV (2008-2009) data. RESULTS: The study sample (N=12,584) was 46.4% (n=5,839) male and 26.3% (n=3,307) of the self-identified as African American/black. The mean age was 21.91 years at Wave III and 28.38 years at Wave IV. Overall, 12.6% of black males, 4.9% of black females, 11.9% of white males, and 6.8% of white females reported dual use (cigarette and cigar use) at Wave III. Additionally, 18.9% of black males, 11.8% of black females, 18.1% of white males, and 10.6% of white females reported marijuana use at Wave IV. Preliminary analyses highlighted that the impact of cigar use on marijuana use varied by race and sex therefore, we tested the three-way interaction term: Race*Sex*Cigar use, controlling for cigarette-only use at Wave 3. Results demonstrated that cigar use was a significant predictor of marijuana use for black females (p<0.01), white males, and 10.6% of white females reported marijuana use at Wave IV. Preliminary analyses highlighted that the impact of cigar use on marijuana use varied by race and sex therefore, we tested the three-way interaction term: Race*Sex*Cigar use, controlling for cigarette-only use at Wave 3. Results demonstrated that cigar use was a significant predictor of marijuana use for black females (p<0.01), and for white males (p=0.001) and females (p=0.001). Cigar use did not significantly predict marijuana use for black males (p=m.s.). CONCLUSION: Examining the relationship of cigar and marijuana use among dual users of combustible products is paramount given the numerous reported patterns of use among young adults and the potential increased risk profiles of dual users.

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MEASURING EMERGING TOBACCO PRODUCT USAGE AMONG YOUNG PEOPLE

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INTRODUCTION: Measuring emerging tobacco products, such as electronic cigarettes is particularly challenging, as the products have an evolving nomenclature and varying terms for their use. These products have not been on the market long enough to have an established history in surveillance surveys; thus, the impact of differences in measurement is not well understood. The present analysis explores differences in two survey approaches to assess ever and current use of emergent products among high school students. METHODS: We used data from the 2014 New Jersey Youth Tobacco Survey (NJYTS) which included both “check all that apply” (e.g., In the past 30 days, which of the following products have you used on at least one day?) and forced choice questions (e.g., During the past 30 days, on how many days did you use an e-cigarette?) for e-cigarette use. Prevalence estimates of ever and current use were calculated using both question formats; agreement between the two versions was assessed via kappa statistics. RESULTS: Ever use was 14.9% using the “check-all that apply” item and 24.1% using the forced-choice item; prevalence of current use was 6.1% and 12.2%, respectively. Measurement agreement was moderate for ever e-cigarette use (kappa = 0.65) but only fair when estimating current use (k = 0.50). Agreement between the two approaches tended to be particularly low among males, Hispanics, and Blacks. DISCUSSION: The “check all that apply” approach for measuring ever and current tobacco use among youth may underestimate use. This may be due to a high false negative rate, directly influenced by the low sensitivity of the “check all that apply” approach. As such, a forced-choice format should ideally be used when measuring use of emerging tobacco products. Additionally, the forced-choice approach provides more fine-grained data on actual patterns of use (e.g., 1 or 20 days in the past 30). Lastly, researchers should use caution when interpreting tobacco use data from “check all that apply” formats.

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THE EMERGENCE OF NON-CIGARETTE PRODUCTS: MARKET AND TRENDS

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INTRODUCTION: Cigarette use has declined in recent years, though overall tobacco use prevalence has remained largely unchanged, likely due to the proliferation of non-cigarette tobacco products in the marketplace. Cigars, electronic cigarettes and hookah were not included in the FSPTCA, which may have led to their growth. This presentation will describe the tobacco landscape and map changes in patterns of use of these products to recent changes in the non-regulated tobacco market. METHODS: Data from national surveys will be used to highlight the use of cigar, hookah, and e-cigarettes in youth, young adults, and adults and Nielsen market scanner data will be used to highlight product characteristics that are driving increased sales for cigars and e-cigarettes. RESULTS: Exclusive cigar and dual cigar and cigarette use are the top patterns of non-regulated tobacco use in youth and young adults. Exclusive hookah use has recently emerged as a popular pattern of use in young adults, as well. The majority of ever and past 30-day e-cigarette use occurs in ever and past 30-day cigarette and other tobacco use in all populations. Only recently, exclusive past 30-day e-cigarette use has become a more popular pattern in young adults; among adults, exclusive someday or daily e-cigarette use occurs largely among former cigarette smokers. Market scanner data from convenience stores points to key product features driving cigar growth: flavored products, packaging, and cigarillo-sized cigars. Market scanner data suggest that sales of rechargeable e-cigarette devices are beginning to overtake sales of disposable products in convenience stores. E-cigarette brands owned by tobacco companies (e.g., Vuse) have dominated the market since their recent introduction. Traditional tobacco retailers constitute a relatively small channel for vapor product sales and products sold in vape shops have different attributes than those sold in convenience stores. CONCLUSIONS: The rise in cigar and e-cigarette use may be partially attributed to the proliferation of new products, including flavored products, in the tobacco marketplace as well as increased marketing of these products.

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PROGRESS, CHALLENGES, AND FUTURE DIRECTIONS FOR ENDS SURVEILLANCE IN THE UNITED STATES AND GLOBALLY

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The 2014 Surgeon General’s report on the health consequences of smoking underscored the importance of rigorous surveillance of electronic nicotine delivery systems (ENDS), including their impact on the initiation and cessation of conventional tobacco use and concurrent use with other conventional tobacco products. Given that present surveillance systems show rapid increases in ENDS use, and that most regular ENDS users also use conventional tobacco products, enhanced surveillance data are critical to inform strategies to minimize harms and maximize potential benefits of these products on individuals and population level health. This presentation will outline the current progress, challenges, and future directions for ENDS surveillance in the context of informing public health policy and evaluation. More specifically, it will discuss the increasing number of national and state surveillance systems that have incorporated ENDS indicators, which have predominately focused on awareness, lifetime use, current use, harm perceptions, and susceptibility. The presentation will also describe opportunities to expand existing systems by incorporating more nuanced indicators related to frequency of use, type of product use, nicotine and flavor content, brand, reasons for use, advertising exposure, mode of access, temporality of use relative to conventional tobacco products, and exposure to secondhand aerosol. The presentation will conclude with a summary of existing challenges related to ENDS surveillance, including the rapidly diversifying product landscape and nomenclature, the increased importance and utility of rapid response surveillance modes and big data, the cross-sectional nature and limited questionnaire space of existing surveillance systems, lack of validated questions, and variations in indicators and definitions across systems. Consideration of these challenges, in coordination with the expansion of existing and future surveillance systems to better capture the diversity and dynamic nature of the ENDS landscape, is critical to enhancing surveillance systems and to most effectively inform public health policy, planning, and practice in the United States and globally.

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TOBACCO CONSUMPTION AND HARM EXPOSURE OF CIGARETTE SMOKERS SWITCHING TO ELECTRONIC CIGARETTES

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There is considerable debate about the benefits and risks of electronic cigarettes (ECs). To better understand the risk-benefit ratio of ECs, more information is needed about the net tobacco toxicant exposure and health effects of cigarette smokers switching to ECs. Forty established cigarette smokers (72.5% male, M age=30.1,
POS3-163
GENDER DIFFERENCES IN SMOKING AND QUITTING BEHAVIORS AMONG URBAN TRANSIT OPERATORS

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Despite declines in smoking over the past decades, important tobacco-related disparities persist among blue-collar workers, including elevated smoking and lower cessation rates. The purpose of this study is to describe the prevalence of current smoking and participation in quitting among an ethnically diverse (68% African American) sample of urban transit operators, and to determine if there are gender differences in these behaviors.

Data were obtained from a cross-sectional tobacco survey conducted among 1,572 eligible employees at an Oakland, California-based public transit agency in cooperation with transit agency management and the transit workers union. The survey was completed by 935 workers (59% participation rate). All procedures were approved by the PIRE Institutional Review Board; informed consent was obtained from participants.

The current analyses are limited to employees classified as transit operators (n=676; 44% female). Approximately 20% of transit operators (n=134) reported current smoking. Prevalence of smoking was significantly higher among female transit operators compared to males (25.5% vs. 15.3%; Chi-Square=17.73; 1 df; p<0.001). These gender differences persisted when adjusted for age and race/ethnicity (Odds Ratio [OR] = 1.99; 95% Confidence Interval [CI] = 1.33, 3.00). There were no gender differences in age of smoking initiation, nicotine dependence, or mean number of cigarettes per day. Among 134 current smokers, 57% made at least one past-year quit attempt. Gender was not associated with likelihood of participation in quit attempts. Smokers in the precontemplation/contemplation stages for intention to quit were less likely to report any cessation activities compared to those in the action/preparation stage (OR=0.26; 95% CI 0.12, 0.61; p<0.01). Frequency of receiving coworker support for quitting was associated with increased likelihood of participating in quit behaviors (OR=1.32; 95% CI 1.09, 1.60; p<0.01). The findings show that female transit operators are more likely to smoke than their male coworkers, but they are not more likely to participate in quit activities. Workplace cessation programs should focus on female smokers.

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POS3-164
BUILDING A UNION-MANAGEMENT COLLABORATION TO ADDRESS TOBACCO-RELATED DISPARITIES AMONG TRANSIT WORKERS

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Municipal transit workers are a blue-collar occupational group with elevated rates of tobacco use. High smoking prevalence suggests that cessation services may be underutilized by this workforce despite free or low-cost access to health maintenance organization (HMO) treatment availability as an employee benefit. This study describes how tobacco-related disparities (tobacco use; underutilization of HMO cessation services) among an ethnically diverse sample of transit workers are being addressed through a union-management collaboration initiated by the researchers.

Support was obtained from an Oakland-based public transit agency and the transit workers union for a research project to identify barriers to worker participation in HMO cessation activities, and to determine how to overcome these barriers. A Union-Management Advisory Group (UMAG) was formed to facilitate communication, obtain critical feedback, and promote worker participation in project activities. Aided by the UMAG, the researchers gained entrance to the workforce to publicize project goals, build trust with workers, and recruit them to project activities (focus groups and cross-sectional tobacco survey). Focus group findings identified numerous social and structural barriers, such as work stress, concerns about quiting medication side effects, and scheduling problems, to participating in HMO cessation services. Survey results showed elevated smoking prevalence (20%) among the workers compared to California adult statewide prevalence (12%).

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POS3-165
INTERACTIVITY AND ENTERTAINMENT IN AN ONLINE PROGRAM FOR SMOKING PREVENTION AMONG ADOLESCENTS: A RANDOMIZED CONTROLLED TRIAL AND INTENTION TO SMOKE

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BACKGROUND: According to the National Cancer Institute, 9 out of 10 daily smokers begin smoking before the age of 18 and become addicted during adolescence. As a result, the design of successful interventions for smoking prevention among adolescents is crucial. Specifically, a smoking prevention interactive experience (ASPIRE) is an entertaining and interactive online program for smoking prevention among adolescents. While ASPIRE has previously shown overall success, little is known about the role of the user experience of entertainment and interactivity on smoking-related intentions. METHODS: A randomized controlled trial (RCT) was conducted among 101 adolescents (aged 12-18). Participants were randomized to either the treatment condition (ASPIRE) or a control condition (a version of ASPIRE without interactivity or entertainment). Data were collected three days before and immediately after the intervention. The RCT was followed by one-on-one interviews with 20 randomly selected adolescents in the ASPIRE group. Repeated-measures mixed effect models were conducted for quantitative data analysis, and the generation of themes from two coders was conducted for qualitative analysis of interviews. RESULTS: Compared to the control group, adolescents who used ASPIRE were more likely to decrease in intention to smoke. Perceived interactivity and perceived entertainment were significantly related to the decrease in intention to smoke. However, compared with entertainment, interactivity showed a stronger relationship with this decrease in intention.
During the interviews, adolescents explained that interactivity allowed them to be involved in the content and discover a variety of hidden health messages. Adolescents expressed interest in entertainment through cartoon-based videos, humorous videos, and adolescent testimonies. Adolescents expressed interest in having interactive games embedded in ASPIRE. CONCLUSION: The design of smoking prevention interventions among adolescents can benefit from both entertaining, and interactive features. An emphasis on interactive elements and game play can help adolescents discover the negative consequences of smoking.

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POS3-166
THE NEED FOR SOCIAL INTERACTION DURING INTERVENTIONS FOR SMOKING PREVENTION AMONG ADOLESCENTS
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BACKGROUND: Public health research has indicated that social influence is a key predictor of adolescent smoking initiation. While social influence may have a negative effect on adolescents, it may also diffuse pro-health messages. Smoking prevention interventions for adolescents have not yet made use of social interaction or motivated positive interpersonal communication. One example is an online program called a smoking prevention interactive experience (ASPIRE). ASPIRE involves human-computer interaction, but lacks interaction between adolescents. This study explored ASPIRE’s ability to motivate social connections and interpersonal discussions about smoking. METHODS: Following a randomized controlled trial, 20 randomly selected adolescents who used ASPIRE were approached for individual-based exit interviews. Interview transcripts were analyzed using ethnographic content analysis by two separate coders who identified common themes among adolescents. As new themes emerged, codes were refined through an iterative process. RESULTS: Adolescents expressed their decision not to smoke and explained that ASPIRE was “eye-opening” and “changed [their] perspective” concerning smoking. Three themes on social interaction emerged: interpersonal discussions, social accountability, and interpersonal persuasion. Adolescents reported discussing smoking with others in their social network: “I talked to my dad about smoking because he smokes a lot”. Adolescents also explained that smokers should be counted for their actions: “Smoking can affect anybody... It’s not just that one person [that smokes], but everybody around you”. Finally, adolescents mentioned they would convince others to quit smoking: “I would talk to people that I know who smoke and try to convince them not to smoke.” DISCUSSION: Although ASPIRE does not involve social interactivity, adolescents expressed social interaction outcomes that may amplify the intervention’s success. Future research on smoking prevention interventions may introduce technology features that encourage connections between adolescents, allowing them to affirm their beliefs and foster new social networks that support a smoke-free environment.

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**POSTER SESSION 4**

**POS4-2**

TRENDS IN LUNG CANCER SURVIVAL IN ARAB WORLD, 1995-2009

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BACKGROUND: Lung cancer is the most common cancer in men and the third most common in women. Tobacco smoking, including second-hand smoke, is the predominant cause of lung cancer worldwide. Screening for lung cancer is under development. It is one of the most aggressive human cancers, with a 5-year overall survival of 10-20%. We use the results of the World Cancer Survival, CONCORD study 2, 2014, for lung cancer in six Arab countries. MATERIALS AND METHODS: Individual lung tumour records were submitted by 07 population-based cancer registries in 06 Arab countries (Algeria, Libya, Tunisia, Jordan, Saudi Arabia and Qatar) for 60.208 adults (15-99 years) diagnosed during 1995-2009 and followed up to 31 December 2009. Estimated five-year net survival, adjusted for background mortality by single year of age, sex, calendar year in each country. RESULTS: Age standardized five years net survival was generally low in the range 10-20% for most geographical areas both in the developed and developing world. Survival was very low less than 10% (only 02% in Libya). CONCLUSION: Surveillance of cancer survival is seen as important by national and international agencies, cancer patient advocacy groups, departments of health and research agencies. Cancer survival research is being used to formulate cancer control strategies to prioritise cancer control measures and to evaluate both the effectiveness and cost-effectiveness of those strategies.

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**POS4-3**

PRECURSORS TO THE MODERN E-CIGARETTE: A TOBACCO INDUSTRY DOCUMENTS ANALYSIS

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Use of electronic cigarettes is rapidly increasing. Although Hon Li is frequently cited as the inventor of the modern e-cigarette, tobacco companies have been developing the technology for a cigarette substitute that aerosolizes nicotine since the early 1990s. We searched the UCSF Legacy Tobacco Documents Library using search terms such as “electric” and “electronic” cigarettes, “e-cigarette,” “smokeless cigarettes,” “tobacco aerosol,” and “vaping,” expanding upon these terms using established snowball sampling techniques and identifying additional relevant documents by exploring adjacent Bates numbers. We focused our analysis on Philip Morris documents discussing technology that aerosolized a nicotine solution due to the resemblance of the described devices to modern e-cigarettes. Over 1,000 documents were reviewed, and over 100 were included in the final analysis. We found that by 1994, Philip Morris developed the “capillary aerosol generator,” which appears to be similar technology to that used in many modern e-cigarettes. However, in 1998, they put the project on hold because of concerns about how such a product would impact their relationship with tobacco farmers and due to struggles with miniaturizing the technology. By 2007, Philip Morris patented a device that used a tobacco flavored liquid to generate an aerosol, simulating the smoking experience. This device resembled the modern e-cigarette tank models. In 2013, Philip Morris/Altria began test marketing the MarkTen e-cigarette. This tobacco document analysis reveals a complex history of efforts to create a product that imitates smoking and was expected to allow for circumventing smoke free laws, and other regulations on tobacco products. This analysis demonstrates that Philip Morris has been developing a product similar to the modern e-cigarette for over twenty years.

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**POS4-4**

MEASURING USE PATTERNS ACROSS THE RANGE OF E-CIGARETTE DEVICE TYPES ON SURVEYS

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Use of electronic Nicotine Delivery Systems (ENDS), often called e-cigarettes, is increasing in a rapidly evolving marketplace characterized by a diverse range of devices. Current surveillance systems do not capture specific information on ENDS device types or patterns of use. Such data are challenging to collect due to: 1) the speed new products enter the market, 2) variation in product characteristics and user terminology, and 3) wide ranging use patterns incompatible with items used for cigarettes, such as cigarettes per day. We assessed survey items measuring ENDS use: number of use occasions, puffs per occasion, times, and locations, among 136 US adult current ENDS users. Respondents were asked survey items to assess use behaviors across 5 ENDS types. Each type was described by name, a brief description, and an image. Following each item, open-ended questions were asked to assess comprehension and recall. A total of 12% of respondents reported difficulty distinguishing among various ENDS device types. Participants who did not have difficulty answering the question, attributed it to the provided images and their own familiarity with the devices. Respondents were more likely to estimate the number of use occasions when reporting for the past 7 days (63%) versus 24 hours (30%). Interpretation of the term “occasions” varied and recalling puffs per occasion was difficult (35% reported difficulty). Most users knew THC could be used in ENDS but opinions were mixed on the likelihood that survey respondents would truthfully report THC/ENDS use. Qualitative themes identifying potential measurement challenges and solutions will be discussed. Findings suggest ENDS device type terminology is not uniformly understood by users. Images improve ease of term interpretation, likely improving measurement. Measuring use occasions or puffs per occasion via self-report faces a variety of challenges. Results suggest that patterns in use occasions and puffing behavior may vary by device type, potentially affecting exposures to emissions. Further study is warranted to develop survey items to accurately measure consumption patterns across the various ENDS types used by consumers.

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**POS4-5**

REGULATION OF E-CIGARETTES: VIEWS OF THE VAPING COMMUNITY IN NEW ZEALAND

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BACKGROUND: In New Zealand (NZ) e-cigarettes are only available without nicotine, although users can import nicotine for personal use. Manufacturers can also apply for regulatory approval to sell nicotine-containing e-cigarettes directly although, to-date, no applications have been made. Both in NZ and around the world, governments and tobacco control advocates are struggling to agree on how e-cigarettes should be regulated, yet the views of the vaping community are rarely considered. Aims: To investigate users’ perspectives on the regulation of e-cigarettes in NZ. METHODS: A cross-sectional on-line survey was undertaken between July-August 2015, with recruitment via advertisements circulated through e-cigarette retailers and online e-cigarette user forums. Participants had to be aged ≥18 years and had used an e-cigarette on most days for at least the last two months. Questions focussed on smoking history, e-cigarette use, as well as participant opinions on appropriate regulation of e-cigarettes. RESULTS: 105 people completed the on-line survey (80% male, mean age 37 years, range=22-69 years, 16% indigenous Māori). 89% of participants had more than 12 years of schooling, 91% knew THC could be used in ENDS but opinions were mixed on the likelihood that survey respondents would truthfully report THC/ENDS use. Qualitative themes identifying potential measurement challenges and solutions will be discussed. Findings suggest ENDS device type terminology is not uniformly understood by users. Images improve ease of term interpretation, likely improving measurement. Measuring use occasions or puffs per occasion via self-report faces a variety of challenges. Results suggest that patterns in use occasions and puffing behavior may vary by device type, potentially affecting exposures to emissions. Further study is warranted to develop survey items to accurately measure consumption patterns across the various ENDS types used by consumers.

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POS4-6 YOUNG ADULT USER EXPERIENCES WITH CRUSH THE CRAVE – A MOBILE SMOKING CESSATION APPLICATION

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BACKGROUND: Young adults have higher rates of smoking. Many young adults are interested in quitting, but perceive traditional smoking cessation resources negatively and prefer not to use pharmacotherapy, counselling, and/or quitlines. Smartphone applications (apps) are an emerging, tailored intervention that holds promise as a cessation tool. However, little is known about Canadian young adults’ use and experiences with apps for smoking cessation. This study evaluated Crush the Crave (CTC), an evidence-based smoking cessation app created specifically for young adults. METHODS: Fifteen semi-structured interviews were conducted with Canadian young-adult users of CTC between June and August 2015. Interviews were qualitatively coded using NVivo 10 for themes that emerged from the data. RESULTS: Participants were 20-29 years old (mean=23.7 years) and 53% male. At the time of interview, 27% of participants identified as smoke-free, 53% were in the process of quitting and/or cutting down, and 20% were still currently smoking. Across the interviews, participants indicated that the app provided a sense of control and ability to self-monitor their progress. This was an important element for users as the app related to them personally, helped visualize their own quit process, and reinforced the decision to quit which continued to motivate users. Many expressed that the app was their buddy that interacted and continually supported them. Participants discussed the need for more interactivity and constant reminders, and for all components of the app to be in-house in order to provide immediate support during a craving. Although social support via social media was available, few used this avenue as cessation was considered to be a private affair that individuals would not like to broadcast on social media. CONCLUSIONS: Smartphone apps are novel creations to support smoking cessation. Qualitative research is a valuable method of understanding how users use and perceive apps in the process of quitting. Across the interviews, participants indicated that the app provided a sense of control and ability to self-monitor their progress. This was an important element for users as the app related to them personally, helped visualize their own quit process, and reinforced the decision to quit which continued to motivate users. Many expressed that the app was their buddy that interacted and continually supported them. Participants discussed the need for more interactivity and constant reminders, and for all components of the app to be in-house in order to provide immediate support during a craving. Although social support via social media was available, few used this avenue as cessation was considered to be a private affair that individuals would not like to broadcast on social media. CONCLUSIONS: Smartphone apps are novel creations to support smoking cessation. Qualitative research is a valuable method of understanding how users use and perceive apps in the process of quitting.

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POS4-7 THE ASSOCIATION BETWEEN PSYCHOSOCIAL STRESS, LOCAL AND TRANSNATIONAL SOCIAL TIES, AND SMOKING BEHAVIOR AMONG LATINAS IN LOS ANGELES

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BACKGROUND: Psychosocial stress is an important factor related to smoking behavior. As a group, Latina women in the US have low rates of smoking, but may be particularly vulnerable to high levels of stress. Thus, it is important to understand how stress may relate to cigarette use among this population. Social ties are important stress buffering factors. As they relate to stress, social ties have been most commonly studied in local (i.e., neighborhood) contexts. But, given that many Latinas have close social ties in their country of origin or region, transnational social ties may be equally important. OBJECTIVE: To understand how psychosocial stress, local and transnational social ties relate to smoking behavior among Latinas. METHODS: Via a clinic- and community-based survey with 1,632 Latina women in Los Angeles, participants reported their stress level in the past year (range:1-10) strength of local social ties (how often they discussed neighborhood issues with others, range:1-10) and how often they communicated with individuals in their community of origin/heritage (range:1-6). Participants were categorized as never smokers, former smokers or current smokers based on whether they ever smoked cigarettes every day for ≥6 months and whether they were currently smoking. Age, income, being born in the US and maternal status were included as control variables. RESULTS: Most (88.3%) of the sample were never smokers, 6.5% were former smokers and 4.7% were current smokers. Logistic regression analysis indicated stress (OR=1.10, p=0.008) and transnational social ties (1.21, p < .001), but not local social ties (OR=1.02, p=0.443) were associated with an increased likelihood of ever having smoked. Neither stress (OR=.99, p=.894), local social ties (OR=1.06, p=.162) nor transnational social ties (OR=.92, p=.381) were associated with likelihood of being a current vs. former smoker. Neither local nor transnational ties interacted with stress to affect smoking status. CONCLUSION: Efforts to reduce stress and promote coping strategies could help reduce smoking in this population. Mechanisms through which transnational communication impacts smoking should be further investigated.

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POS4-8 EMPLOYMENT DURING ADOLESCENCE: INDIVIDUAL AND SCHOOL LEVEL EFFECTS ON TOBACCO USE IN MEXICO

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OBJECTIVE: To examine the association between employment and school prevalence of employment and tobacco use among Mexican secondary school students. METHODS: Cross sectional survey of school students from Mexico (n=60 schools, n=9727 students), aged 11-15. Students were asked whether they worked, employed vs. not employed, and whether they bought single cigarettes or had ever used an e-cigarette. We examined the independent association between employment and at the individual- and school levels and current smoking of conventional cigarettes, use of single cigarettes, and ever use of e-cigarettes. RESULTS: Overall, 17% of students were employed. Across schools, the prevalence of employed students ranged from 3.5% to 35% (Mean=17%, SD=8). Older age, male, lower parent education, lower school grades, and having friends and family members who smoke were all significantly associated with increased likelihood of being employed. Employment was associated with increased likelihood of current smoking of conventional cigarettes (AOR=1.39, 95% CI 1.15, 1.66) and buy of single cigarettes (AOR=1.43, 95% CI 1.21, 1.68), but was unassociated with use of e-cigarettes (AOR=1.09, 95% CI 0.91, 1.29), net of the other risk factors. Adding school level employment prevalence to the above model indicated additional increased likelihood of buying single cigarettes (AOR=1.03, for each percentage increase in school employment prevalence, 95% CI 1.02, 1.05), but no association with conventional cigarette smoking or use of e-cigarettes. CONCLUSIONS: Employment has an independent effect on ability to buy and use of conventional cigarettes among adolescents. School prevalence of employed adolescents has an independent effect on ability to buy single cigarettes above and beyond that of employment at the individual level. Parents, educational practitioners, and policy makers should monitor and target schools with higher prevalence of employed students with interventions that counter the effect of employment to access to and use of tobacco products.
POS4-9  
A REVIEW OF SMOKING RESEARCH ON U.S. VETERANS WITH PTSD: SMOKING RATES, SMOKING-RELATED VARIABLES, AND SMOKING TREATMENTS  
Danielle Shipgel1, Christine Lee, Kate Segal, Hannah Esan, Alyssa Burns, Andrea Weinerberger, Yeshiva University, NY, USA  
INTRODUCTION: Veterans comprise a large segment of the U.S. adult population and smoke at high rates. Posttraumatic stress disorder (PTSD) is one of the most common psychiatric disorders diagnosed in veterans. Moreover, PTSD is associated with high smoking rates and difficulty quitting in the general population. The current study reviewed research on smoking and PTSD in veteran samples to summarize past research and identify areas in need of additional inquiry. METHODS: A MEDLINE search identified papers on smoking and veterans with PTSD published through December 31, 2014. Article abstracts were individually examined to determine whether they met the inclusion criteria: (1) at least part of the sample consisted of U.S. veterans with PTSD diagnoses, and (2) the study examined some aspect of smoking behavior (e.g., smoking rates, smoking treatment). RESULTS: Veterans with PTSD were more likely to report smoking and heavy smoking compared to veterans without PTSD. Smoking behaviors (e.g., current smoking, heavy smoking, smoking expectancies) differed by PTSD symptom clusters and by combat exposure. The majority of smoking cessation studies examined the integration of smoking treatment into PTSD clinics. Smoking treatment studies that assessed psychiatric outcomes found that smoking abstinence was not associated with a worsening of PTSD symptoms. CONCLUSIONS: It would be useful for future research on veterans with PTSD to extend topics beyond rates of smoking in order to better understand the treatment needs of this population. Research on smoking-related behaviors can help identify areas to target with interventions. More treatment-related research can identify the most efficacious interventions to help veterans with PTSD quit smoking and avoid long-term relapse.  
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POS4-10  
EFFECTS OF FOLLOW-UP CALL ON QUALITY OF LIFE AND QUIT RATE AMONG SMOKERS CALLING THAILAND NATIONAL QUITLINE  
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INTRODUCTION: Thailand’s prevalence of cigarette smoking at 21.2% is significant among its adult population, and the quit rate is low at 7%. Studies have shown that the Thailand National Quitline (TNQ) is an effective tool for smoking cessation. The current study aimed to assess the effects of follow-up calls on the quality of life and quit rates among smokers who called the Thailand National Quitline (TNQ) from February to July 2013. A sample of 204 smokers who called TNQ and met the inclusion criteria: (1) at least part of the sample consisted of Thai adults with at least one active quit attempt, (2) the study examined some aspect of smoking behavior (e.g., smoking rates, smoking treatment), were randomly recruited from the TNQ database. Data were collected from TNQ’s database and telephone interviewing throughout August to September 2014. Research instruments included 1) demographic data and smoking screening, 2) the Quit Smoking Questionnaire, and 3) the Short-Form Health Survey: SF-12. The majority of participants (88.2%) were males. Most smokers wanted counseling about adult e-cigarette ever-trier tobacco product use patterns, likelihood of initiation, and likelihood of cessation. Respondents were recruited using the two modes noted above. CLT was selected in order to include qualified adult respondents who were not consumer panel members or may not own a computer. Potential respondents completed the same computerized respondent screener and continued smoking over 3 and 6 months had higher average score of quality of life both in physical and mental components than those who continued to smoke (p-value < .05).  
Funding: Thailand National Quitline, Sangsukthai Foundation  
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POS4-11  
DIFFERENTIATING LITTLE CIGAR/CIGARILLO (LCC) USE AND ALTERATION  
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INTRODUCTION: The rate of use of Little Cigar/Cigarillo (LCC) products has significantly increased in the past decade. Studies also indicated the prevalence of LCC use was higher among African Americans (AA) and young populations. However, these findings may not accurately reflect trends in LCC consumption patterns. LCC alteration, a behavior where users replace the tobacco content with marijuana, has shown to be a common practice among AA young smokers. Limited scholarly efforts have been focused on how differently individuals perceive LCC use (as tobacco products) and alteration (with marijuana). METHODS: An online survey study was conducted in 2014. Among the 213 young AA adults (64% female, average age = 23.8, 60% students) recruited at events, community centers, and colleges in a Southern city, 111 reported using cigarette, LCCs, or other tobacco products. Guided by theory of planned behavior and health belief model, the current analysis focuses on attitude, subjective norms, perceived control, perceived susceptibility and severity of health consequences, and stigma associated with the LCC-related behaviors. Paired-sample t-tests were used to explore the differences in beliefs about LCC use and alteration. RESULTS: Participants reported a slightly negative attitude toward both LCC use and alteration, and considered these behaviors under their control without much perceived social pressure or associated stigma. Perceived control and stigma were comparable between LCC use and alteration. Interesting-ly, our sample appeared to have more positive attitudes toward LCC alteration and greater social pressure of altering LCC. For the risks, participants perceived low levels of susceptibility and severity. The negative consequences were perceived more likely to occur for LCC use, the difference was insignificant. CONCLUSIONS: These findings suggest AA young smokers hold different beliefs about LCC use and alteration, in terms of attitude and perceived norms. While further research is needed, health educators are recommended to differentiate LCC use and alteration when communicating with smokers.  
Funding: St. David’s Center for Health Promotion and Disease Prevention Research in Underserved Populations  
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POS4-12  
IN-MARKET SURVEY STUDIES ON E-VAPOR PRODUCT USE – METHODOLOGICAL CONSIDERATIONS  
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INTRODUCTION: The use of electronic cigarettes (e-cigarettes) has surged in recent years along with the availability of related products. However, there is a lack of knowledge about the accuracy of information made available by companies that sell these products. This lack of knowledge is due to the marketing practices of e-cigarette companies that may oversell the benefits of these products. It is important to understand the marketing practices of these companies, and to identify the methods used to measure the use of e-cigarettes. METHODS: A methodological study is conducted to identify the methods used to measure the use of e-cigarettes. The study involved a review of the literature on e-cigarette use and the use of in-market surveys to measure e-cigarette use. RESULTS: The study found that in-market surveys are commonly used to measure e-cigarette use, but there is a lack of knowledge about the accuracy of this information. The study also found that the use of e-cigarettes is not accurately reflected in the data collected from these surveys. CONCLUSIONS: The use of in-market surveys to measure e-cigarette use is not accurate, and there is a need for more research to improve the methods used to measure e-cigarette use.  
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main survey, either online (n = 3,472) or at a CLT facility (n = 2,037). Respondents in both modes consisted of qualified adults who reported either having (1) ever tried an e-cigarette (Online = 2,492; CLT = 1,531) or (2) used a tobacco product “every day,” “some days,” or “rarely” and during the past 30 days but never having tried an e-cigarette (Online = 980; CLT = 506). Measures of initiation and cessation differed between the two recruitment modes. Lower levels of initiation and higher levels of cessation were observed among online respondents than among CLT respondents. These differences remained after adjusting for a range of demographic factors (age, gender, race-ethnicity, and family income in 2013). Similar observations were consistently noted in two additional in-market survey studies of select e-vapor products. These results suggest that the two recruitment modes draw upon different populations, and pooled data should be interpreted with caution.

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POS4-13

REASONS FOR FIRST TRYING E-CIGARETTES AS PREDICTORS OF CONTINUATION AND DISCONTINUATION OVER TIME AMONG YOUTH

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E-cigarette use among youth has increased in recent years. More longitudinal research is needed to understand how reasons for trying e-cigarettes relate to use patterns over time. The current project examined reasons for first trying e-cigarettes (identified in Kong et al., 2014) as predictors of e-cigarette use in the next year using longitudinal data from middle and high school students in CT (mean age 15.6 years, 47.7% female). Surveys were completed at two time points (Fall 2013 and Spring 2014) and ever e-cigarette users at time 1 were categorized into those who continued (i.e., recent use in the past 30 days, N=171) or stopped use (i.e., no use in the past 30 days, N=156) at time 2. First, we used logistic regression to examine how reasons for initiating e-cigarette use at time 1 related to odds of continuing vs. stopping use at time 2. Next, among those who continued use, we examined how reasons for initiating e-cigarette use at time 1 related to past 30-day-frequency of e-cigarette use at time 2 using t-tests to examine mean differences and a multiple linear regression to control for covariates and frequency of use at time 1. Gender, race (white vs. non-white), age, and current cigarette smoking status (yes/no in the past 30 days at time 2) were included as covariates in both regression models. Odds of continuing (vs. stopping) use were significantly higher for those who were younger (OR=0.66), currently smoking cigarettes (OR=4.14), and first tried e-cigarettes to use them anywhere (OR=2.30) or to quit smoking (OR=10.42). Among continuers, those who first tried e-cigarettes to use them anywhere, to quit smoking, or because of low cost used more days in the past 30 at time 2 (M=15.95-20.00 days) than those not endorsing these reasons (M=8.96-9.85) (ps<.001). In a multiple linear regression including covariates and frequency of use at time 1, first trying e-cigarettes because of low cost remained significantly related to more frequent use at time 2 (B=7.19, SE=2.48, p<.001). These results suggest regulatory strategies such as increasing cost or prohibiting e-cigarette use in certain places may be important for reducing risk in youth.

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POS4-14

SUPPORT FOR A COMPREHENSIVE SMOKEFREE POLICY IN A SMALL, MID-WESTERN TOWN WITH A CASINO

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INTRODUCTION: As the number of municipalities and states that are adopting comprehensive smokefree policies (including all workplaces, restaurants, and bars) continues to grow, communities with casinos are often left behind or provide exemptions for casinos. By allowing casinos to be exempt from smokefree policies, casino employees and visitors remain exposed to secondhand smoke. While one small, mid-western town with a casino considers adopting a smokefree policy, a community survey was conducted to gauge support and attitudes about inclusion of the casino in a policy. METHODS: A 22-item, anonymous survey was collected at community festivals and online. Survey items included demographics, secondhand smoke exposure, casino patronage, attitudes about smoking in the casino, support for a comprehensive smokefree policy that includes the casino, smoking status, and cessation attempts. Descriptive statistics (means and frequencies) were calculated. RESULTS: Over 450 surveys were collected. Sixty percent of survey respondents were community residents, and the remaining respondents were from surrounding communities. Among all survey respondents, 66% reported being exposed to secondhand smoke at public places and 64% supported the adoption of a local comprehensive smokefree policy that would include the casino. Support for the policy increased with age and education, was supported by one out of four smokers, and was supported by 75% of business owners. Support for the policy was even higher among community residents who were registered voters (72%). Among all respondents, 65% of casino patrons reported being bothered “somewhat” or “very much” by smoke in the casino, and 90% of respondents reported that they would go the same amount, more, or much more to the casino if smoking were prohibited. CONCLUSIONS: Community residents, visitors, and business owners all support the adoption of a comprehensive smokefree policy that includes the casino. Despite the hesitation of some local governments to include casinos in smokefree policies, community health and casino business will likely benefit from a comprehensive policy.

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PO5-16
ADULT TOBACCO USE IN 2013/4: FINDINGS FROM THE POPULATION ASSESSMENT OF TOBACCO AND HEALTH (PATH) STUDY, WAVE 1
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BACKGROUND: Non-cigarette tobacco products are evolving rapidly, their popularity is rising in the United States (U.S.), and their impact on population-level health is unknown. METHODS: We present prevalence estimates and correlates of use for 10 types of tobacco products among adults from Wave 1 (i.e., data collected 9/12/13 to 12/14/14) of the Population Assessment of Tobacco and Health (PATH) Study, a large nationally representative longitudinal study of tobacco use and health in the U.S. The PATH Study includes 32,320 adults aged 18+ years. Participants were asked a series of questions about their use of cigarettes, e-cigarettes, traditional cigars, cigarillos, filtered cigars, pipe tobacco, hookah, snus pouches, other smokeless tobacco, and dissolvable tobacco. Prevalence of use for each tobacco product was determined using various definitions, demographic correlates, and current use status of other product(s); and prevalence of multiple product use was explored. Findings were compared to other national surveys. RESULTS: Over a quarter (27.5%) of adults in the PATH Study were current users of at least one type of tobacco product, although prevalence estimates varied greatly depending on definition. Nearly 40% of current tobacco users used multiple products; cigarettes plus e-cigarettes were the most common combination. Younger adults (i.e., those aged 18-24 years), males, racial minorities, sexual minorities, and those with lower educational attainment and household income generally had higher tobacco use prevalence than their counterparts. Findings were in line with expectations based on national surveys. CONCLUSIONS: Millions of American adults (i.e., those aged 18 and older) use one or more types of tobacco product, and prevalence was higher among younger adults and disparate groups. Among current tobacco users, multiple product use was common. These findings will serve as baseline data to examine trajectories of tobacco product use within adults in the U.S. over time.

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PO5-17
RAPID ASSESSMENT FOR ESTABLISHING EVIDENCE OF AN UNDERGROUND CIGARETTE MARKET IN OAKLAND CHINATOWN
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We conducted a rapid assessment to explore whether an underground cigarette market exists in Oakland Chinatown, California. First, we employed the littered pack methodology to assess if untaxed cigarettes have been consumed in this ethnic enclave. Then, we conducted street corner surveys to determine if untaxed cigarettes in this enclave are consumed by smokers who live and work there. We collected 46 littered cigarette packs on the streets of Oakland Chinatown, which were sorted, counted and analyzed. Of the packs collected, 36 packs (62.2%) retained their cellophane. Of the packs with cellophane, 66.7% (N=20) had no tax stamp. We found 14 different Chinese brands of cigarettes. Chinese brand cigarettes made up the largest proportion (90%) of the untaxed littered packs. Additionally, two Mandarin- and Cantonese-speaking surveyors administered brief surveys to adult smokers during two weekdays at busy street corners. We collected 23 surveys. Four of the participants were female. Nearly 65% (N=15) of the participants were born in mainland China or Hong Kong. Among our participants, 78.3% (N=18) self-reported their race/ethnicity as Chinese/Chinese American, and 73.9% (N=17) spoke Chinese as their primary language. The average number of years in the U.S. among those who were foreign-born was 8.86 years. Nearly 39% (N=7) of the Chinese/Chinese American adult smokers responded that they purchased untaxed cigarettes in the past year. All of these Chinese/Chinese American adult smokers of untaxed cigarettes were male, and either live or work in Oakland Chinatown. About half (52.1%) reported a Chinese brand of cigarettes as the brand that they usually smoke. These brands included those gathered from our collection of littered packs. Results from this rapid assessment study suggest that untaxed cigarettes are consumed in Oakland Chinatown through an underground cigarette market, and that these untaxed cigarettes are being consumed by Chinese/Chinese American smokers who live and work in this ethnic enclave. More research is needed to understand the socio-cultural context that increases the availability, access, and use of untaxed cigarettes in Chinese ethnic enclaves.

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PO5-18
DEVELOPMENT OF A SURVEY INSTRUMENT TO RETROSPECTIVELY ASSESS TRANSITIONS BETWEEN USE OF MOIST SMOKELESS TOBACCO AND CIGARETTES
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Existing data suggests that some adult tobacco users transition between moist smokeless tobacco (MST) use and cigarette smoking. However, to our knowledge, no tools exist to assess adult tobacco use on a year-by-year basis for the purpose of measuring transitions between tobacco product use over an entire lifetime. We have developed and tested an on-line survey instrument to retrospectively assess adult (age 19+) use of MST and/or cigarettes. Respondent recall is aided through the inclusion of personal life events and world events for each year of a respondent’s adult life, an approach used to assess use of other substances. Respondents are asked for each year whether they recall using MST and/or cigarettes, how much of each product type they recall using per day on average, how many days/week they used each product type on average, whether they attempted to quit and whether they completely quit using either product. Methods used to aid cigarette cessation is also collected along with quit attempts. Completion of the instrument results in an annualized individual lifetime use history of cigarettes and/or MST. We conducted a series of cognitive testing based on one-on-one interviews for comprehension of the survey questions among adult MST users (N=13) and determined that the instrument was understandable and was able to characterize retrospective patterns of MST and cigarette use. We also measured intra-respondent test-retest reliability (N=7) after one week. At the respondent level, there was 89% (range: 97%-78%) intra-respondent response matching between the test and re-test surveys. Gwet’s AC1 scores for cigarettes and/or MST use each year, average days used per week, average amount used per week recall attempts ranged between 0.948 and 0.702 on the question level, indicating respondents were highly consistent in their responses between the test and re-test. This survey instrument will be an important research tool to examine switching behaviors between MST and cigarettes. This survey will also help understand the relationship between dual tobacco product use and intensity of use or cessation and the length of dual tobacco product use.

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PO5-19
ADULT LIFETIME TRANSITIONS BETWEEN MOIST SMOKELESS TOBACCO AND CIGARETTES: RESULTS OF A LARGE, RETROSPECTIVE SURVEY IN THE UNITED STATES OF AMERICA
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BACKGROUND: Existing data indicate that some adult tobacco consumers transition between use of moist smokeless tobacco (MST) and cigarettes. However, the tobacco use patterns associated with such transitions are not well characterized. METHODS: We conducted a lifetime, retrospective survey measuring use of MST...
and cigarettes on an annual basis among 998 individuals who reported ever using MST on a consistent basis or to lifetime criteria (20+ uses). We balanced the sample to the demographics of ever MST users in the 2013 National Survey on Drug Use and Health. 40% of respondents were recruited through on-line panels and 60% through 35 central locations where MST use is more prevalent. RESULTS: Among this sample of ever consistent MST users, we find that 69% report cigarettes as the first tobacco product they ever tried, 19% report MST was the first tobacco product ever tried, with the remainder reporting other tobacco products (e.g. cigars). We defined respondents as primary exclusive MST users, primary exclusive cigarette smokers, or primary users of both products (dual users) based on which of these states each respondent had spent the majority (greater than 50%) of their adult life. 23.4% of the sample were primary exclusive MST users, 21.8% were primary cigarette smokers and 36.7% were primary dual users. The remainder of the sample primarily used neither product throughout their adult life. 71.3% of the total sample reported they dual used MST and cigarettes at some point during their adult lives. On average, these respondents dual used for 12.3 years or 47% of their adult lives. Regarding transitions, in the total sample, these respondents reported changing tobacco use states (between exclusive use, dual use or use of neither MST nor cigarettes) an average of 3.1 times. 13.3% of all respondents reported quitting smoking completely and, of these, 7.6% became exclusive MST users. However, 22.4% of all respondents reported completely quitting MST of whom 50.4% became exclusive cigarette smokers. DISCUSSION: Overall, these data suggest adult use of MST and cigarettes is dynamic and complex. These data may have implications for population modeling.

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POS4-20
RESPONSE TO VARYING NICOTINE CONTENT LEVELS IN CIGARETTES: ACUTE EFFECTS IN VULNERABLE POPULATIONS

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INTRODUCTION: Research in the general population of smokers suggests that lowering the nicotine content in cigarettes to very low levels reduces nicotine dependence and toxin exposure without substantial adverse consequences (e.g., compensatory smoking, severe withdrawal). The purpose of this study was to begin investigating reduced nicotine content cigarettes in subpopulations of smokers especially vulnerable to the addictive and health consequences of smoking. METHODS: Participants were 26 adult, current cigarette smokers (age 18-65) from one of three subpopulations: economically disadvantaged women of reproductive age (n = 9), those with opioid dependence (n = 11), those with affective disorders (n = 6). Participants completed fourteen 1-3 hr experimental sessions (≥ 48 hrs between sessions) in a within-subjects design. Sessions were conducted following brief abstinence (< 50% baseline CO). We studied four research cigarettes varying in nicotine content (0.4, 2.4, 5.2 and 15.8 mg/g) under double-blind conditions. We assessed smoking topography, CO exposure, subjective effects, and preference between doses in two-cigarette concurrent choice tests. Results were collapsed across vulnerable groups and analyzed using repeated measures ANOVA. RESULTS: No systematic differences between doses were discernible in smoking topography or CO exposure. All doses were equi-effective at reducing mean nicotine withdrawal levels. Ratings of “satisfying” and “tastes good” increased as a graded function of nicotine content on the Cigarette Evaluation Scale, with no differences across other scale items. Participants preferred the 15.8 mg/g over the 0.4 and 2.4 but not the 5.2 mg/g doses in concurrent choice testing: no preferences between the two lowest doses were noted. CONCLUSIONS: We saw no evidence of compensatory smoking during acute exposure to reduced nicotine content cigarettes. Participants preferred the higher nicotine content cigarettes and nicotine withdrawal was well controlled by all doses. These initial results are promising regarding the feasibility of lowering nicotine content in cigarettes to very low levels in vulnerable smokers without adverse effects.

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POS4-21
CAFFEINE CONSUMPTION IN COFFEE, CHOCOLATE, TEA, AND ENERGY DRINK FLAVORED E-LIQUIDS


The prevalence of e-cigarettes has grown at a very rapid rate in recent years. Flavored e-cigarettes are among the most popular varieties with universal appeal to customers. Among the vast range of e-cigarette flavors offered, coffee, chocolate, tea, and energy drink flavors are very common. In their traditional form, coffee, chocolate, tea, and energy drinks are well known to contain caffeine, a central nervous system stimulant that is widely consumed around the world. While a few e-cigarette products explicitly claim to contain caffeine, caffeine is not generally associated as an additive in e-cigarettes. Little is known about the effects of caffeine consumption by inhalation and consumers should be aware of its inclusion in certain e-cigarette products. A gas chromatograph-mass spectrometry (GC-MS) method was developed, optimized, and validated to measure the concentration (measured range 0.54-500 μg/g) of caffeine in e-liquids. Forty-four e-liquid flavors associated with caffeine like coffee, chocolate, tea, and energy drinks were assessed for caffeine concentration. This is the first known study to investigate the concentration of caffeine in e-liquids flavored like traditionally caffeinated products.

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POS4-22
PUFFING TOPOGRAPHY AND CIRCADIAN PUFFING PATTERNS AMONG ELECTRONIC CIGARETTE USERS

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SIGNIFICANCE: Studies have shown significant variability in nicotine delivery across various models and types of electronic nicotine delivery systems (ENDS). Currently, little is known about the patterns of ENDS use and puffing topography among experienced users. This study aims to determine the circadian puffing patterns and average puffing topography among long-term ENDS users. METHODS: Twenty-five experienced users of refillable tank ENDS were recruited. All subjects (average age 27.7; 15 males) were former smokers who had used nicotine-containing ENDS for at least one month on a daily basis. They were provided with a puffing topography device (Painless CREsSmicro) with a custom made ENDS adaptor. Subjects were asked to use their own ENDS devices through the monitor over one day, starting when they woke up until they went to sleep. We analyzed the total number of puffs taken over 24 hrs, frequency of puffing, average puff volume, duration and velocity (flow rate). RESULTS: We found that ENDS users took on average 157±(±19 SD) puffs over 24 hrs. The earliest recorded puff was at 6am and the latest puff as recorded at 3am the following day. Users took the majority of puffs after noon as compared to before noon (119±2 vs. 39±2; p<0.05). We found that the puffing frequency (number of puffs taken per hour) increased during the morning until reaching 15±3 puffs/hr between 11am and 12pm, and decreased gradually during the rest of the day. The average volume of a single puff was 77±5±3.5ml and lasted on average 3.1±0.1sec. The average puff velocity was 25.2±0.6 ml/sec. CONCLUSIONS: This study provided novel data on the patterns of ENDS use among experienced users. Our data suggest that ENDS users modify their puffing behaviors during a day by taking fewer puffs while puffing more frequently during morning hours, compared to the rest of the day. ENDS users also take longer puffs than cigarette smokers suggesting important differences in puffing behavior between ENDS users and cigarette smokers. Laboratory testing protocols for ENDS should reflect realistic puffing behaviors of experienced users.

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POS4-23
MENTHOL CIGARETTE SMOKERS AND E-CIGARETTE USE: CORRELATES IN A COMMUNITY SAMPLE
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INTRODUCTION: Electronic cigarettes (e-cigarettes) are available in multiple flavors that are banned in combustible cigarettes. With the introduction of Blu menthol e-cigarettes, African Americans, women, and youth may be vulnerable to e-cigarette marketing. This study examined factors associated with e-cigarette use among current menthol and non-menthol smokers. METHODS: Eligible participants (N=223) were adults who reported current smoking (at least 100 lifetime cigarettes, and smoking on at least some days). Telephone administered surveys assessed demographics, menthol smoking, e-cigarette use, risk perceptions, and knowledge, and intentions to use e-cigarettes. The sample was mostly middle aged, high school educated (79%), female (62%), single (58%), lower income (56%), and racial/ethnic minorities (40% Black, 29% Hispanic, 27% White, 3% Other). RESULTS: 68% of the sample reported menthol cigarette smoking. Menthol smokers were more likely to endorse e-cigarettes compared to non-menthol smokers (43% vs. 7%, p<0.01). Among lifetime users (n=151), there were no differences in current or flavored e-cigarette use. However, menthol smokers were more likely to use mentholated e-cigarettes compared to non-menthol smokers (43% vs. 80%, p<0.01). Menthol smokers also demonstrated less e-cigarette knowledge (p=0.1). Among lifetime users (n=151), there were no differences in current or flavored e-cigarette use. However, menthol smokers were more likely to use mentholated e-cigarettes compared to non-menthol smokers (43% vs. 7%, p<0.01). There were no differences in perceptions of combustible cigarettes as addictive; however, menthol smokers were less likely to perceive e-cigarettes as addictive (p=0.03). Menthol smokers were also more likely to endorse future e-cigarette use to reduce or quit smoking (88% vs. 73%, p<0.01). CONCLUSIONS: The parallels between factors associated with menthol cigarette smoking and e-cigarette use suggests that menthol smokers may be vulnerable to e-cigarette marketing and future use. Research is needed to elucidate these relationships and to understand how they might influence smoking cessation in this population.

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POS4-24
WOMEN VETERANS’ TOBACCO USE PREVALENCE: A POPULATION HEALTH COMPARISON WITH NATIONAL AND REGIONAL REFERENCE GROUPS, VETERANS AFFAIRS LOMA LINDA HEALTHCARE SYSTEM, LOMA LINDA, CA
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BACKGROUND: Smoking prevalence is generally higher in the veteran population than the US non-veteran population. The minimal data concerning women veterans smoking and the rapidly growing number of women entering the military, demonstrates less e-cigarette knowledge (p<.01). Among lifetime users (n=151), there were no differences in current or flavored e-cigarette use. However, menthol smokers were more likely to use mentholated e-cigarettes compared to non-menthol smokers (43% vs. 80%, p<.01). Menthol smokers also demonstrated less e-cigarette knowledge (p<.01). Among lifetime users (n=151), there were no differences in current or flavored e-cigarette use. However, menthol smokers were more likely to use mentholated e-cigarettes compared to non-menthol smokers (43% vs. 7%, p<0.01). There were no differences in perceptions of combustible cigarettes as addictive; however, menthol smokers were less likely to perceive e-cigarettes as addictive (p=.03). Menthol smokers were also more likely to endorse future e-cigarette use to reduce or quit smoking (88% vs. 73%, p<0.01). CONCLUSIONS: The parallels between factors associated with menthol cigarette smoking and e-cigarette use suggests that menthol smokers may be vulnerable to e-cigarette marketing and future use. Research is needed to elucidate these relationships and to understand how they might influence smoking cessation in this population.

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POS4-25
NOVEL TOBACCO PRODUCT USE IN A NATIONALLY REPRESENTATIVE SAMPLE OF U.S. ADULTS
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BACKGROUND: In recent years increases in use of hookah tobacco, little cigars and cigarettes (LCC) and electronic nicotine delivery systems (ENDS) have been reported, especially for young adults. Current prevalence estimates are critical to assist the FDA with effective regulation. METHOD: We conducted a nationally-representative phone survey of 5,014 adults (response rate 42%). Samples were drawn from random-digit-dial landline and cell phone frames covering approximately 98% of all U.S. households, with oversampling of regions with historically higher rates of tobacco use and poverty. Population-based weights were used to calculate prevalence estimates. RESULTS: The sample was 52.7% female, 69.6% white, 19.6% African-American, 8.6% Hispanic, and 3.9% gay, lesbian or bisexual (GLB). Current (past month) weighted prevalence was: 8.9% ENDS, 7.4% LCC, 2.9% hookah, and 17.8% for established cigarette smoking. Young adults (18-25) had higher rates of use of all three novel products (19.0% ENDS, 11.6% LCC, 10.0% hookah) compared to older adults (26+: 7.2% ENDS, 6.7% LCC, 1.7% hookah). However, fewer young adults (17%) were cigarette smokers compared to older adults (18%). Males were more likely to be ENDS users (AOR=1.7, CI=1.1, 2.7), but no gender differences were found for ENDS or hookah. GLBs were more likely to be ENDS (AOR=2.0; CI=1.1, 3.7) and LCC (AOR=2.5; CI= 1.3, 5.1) users than heterosexuals. Education and socioeconomic status were inversely related to use of all three novel products. Compared to Whites, hookah users were more likely to be African American (AOR=3.8, CI=1.5, 5.3), while ENDS users were less likely to be African American (AOR=0.4; CI=0.2, 0.6) or American Indian/Native Alaskan (AOR=0.1; CI=0.05, 0.4). No differences by Hispanic ethnicity were observed. CONCLUSIONS: Rates of novel tobacco product use are high among young adults. More young adults reported current ENDS use (19%) than cigarette smoking (17%). This trend has been previously reported for adolescents and appears to be continuing into young adulthood. Young adults, GLBs, and those with lower education and socioeconomic status remain at increased risk for novel tobacco product use.

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POS4-26
LONGITUDINAL PATTERNS OF TOBACCO USE BY COLLEGE STUDENTS
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BACKGROUND: Poly-tobacco use is increasing, especially with the arrival of new tobacco products to the market. However, little is known about how patterns of poly-tobacco use vary over time. We sought to understand how college students’ use of multiple tobacco products changes over time. METHOD: In fall 2010, we recruited a cohort of 3,146 students from 11 colleges in North Carolina and Virginia. Students completed annual online surveys each fall for 4 years. Using longitudinal latent class analysis, we assessed patterns of use of cigarettes, cigar products, and hookah use, and ENDS use. RESULTS: Rates of novel tobacco product use are high among young adults. More young adults reported current ENDS use (19%) than cigarette smoking (17%). This trend has been previously reported for adolescents and appears to be continuing into young adulthood. Young adults, GLBs, and those with lower education and socioeconomic status remain at increased risk for novel tobacco product use.
smokeless tobacco, hookah, and electronic nicotine delivery systems (ENDS) across the four years of college. RESULTS: The cohort was 49.8% female, 15.6% nonwhite, and 6.6% Hispanic. The best-fitting model based on goodness of fit statistics was a five-class model. Students in Class 1 (3.3% of sample) reported moderate but stable cigarette use, decreasing hookah and cigar use, moderate high and increasing smokeless use, and minimal, but increasing ENDS use. Students in Class 2 (6.2%) reported high and stable cigarette use, moderate and decreasing hookah and cigar use, minimal smokeless use, and low, but increasing ENDS use. Students in Class 3 (10.5%) reported moderate but stable cigarette use, decreasing hookah and cigar use, minimal smokeless use, and minimal, but increasing ENDS use. Students in Class 4 (10.4%) reported increasing cigarette use, moderate and stable hookah and cigar use, minimal smokeless use, and minimal, but increasing ENDS use. Students in Class 5 reported no tobacco use and represented 69.5% of the sample. CONCLUSIONS: Patterns of tobacco use varied considerably over time, with increases in current cigarette smoking in classes 1 and 4 (14% of cohort). For all but one class (Class 4), hookah and cigar use decreased after freshman year. Prevention activities should focus on first-year students who are at high risk for certain kinds of tobacco products. Students in two of the five classes showed risks of increasing cigarette smoking over time, highlighting the need for targeted interventions for these students.

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POS4-27
PERCEPTIONS, INTEREST IN TRYING, AND USE OF FLAVOR CAPSULE CIGARETTE BRAND VARIETIES AMONG MEXICAN ADOLESCENTS

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BACKGROUND: The market share for cigarettes with flavor capsules has rapidly increased in many countries, including Mexico. Preference for flavor capsules is associated with greater appeal and reduced harm perception among adult smokers, but nothing is known about adolescent’s perceptions and use of flavor capsules. METHODS: In 2015, surveys were conducted with 10,124 students in middle schools randomly selected from the three cities in Mexico. Students were randomized to view three cigarette packs, one from each major brand family (Marlboro, Camel, Pall Mall), with brand names removed. Each set of three packs included a regular, light and capsule brand variety, for which students reported: having seen it; having tried it; and interest in trying it. Students were asked to write the brand name (brand recall) and evaluate pack attractiveness. Logistic GEE models regressed pack attractiveness (very or a little vs. not at all) and interest in trying on indicators of pack attributes (brand family, flavor capsule) controlling for socio-demographics and smoking risk factors, including brand family, recall and prior trial. RESULTS: Marlboro regular, Camel regular, Camel light and Pall Mall capsules were most often seen before (64%, 49%, 43%, 42%) and recalled (25%, 17%, 9%, 8%). Capsule varieties for Pall Mall and Camel were most often rated as very attractive (13%, 9%) and of interest for trial (22%, 13%) along with Marlboro regular (14%). In GEE models, flavor capsule varieties were associated with higher odds of perceived attractiveness (AOR=2.61, 95%CI=2.29, 2.98) and interest in trying (AOR=1.89, 95%CI=1.68 - 2.14). Furthermore, perceived attractiveness was associated with greater interest in trying (AOR a little vs not at all=2.93, 95%CI=2.61, 3.30; AOR very vs not at all=5.10, 95%CI=4.28, 6.08). Results were similar when limiting analyses to never smokers. CONCLUSION: This study suggests that the flavor capsule cigarettes, and their packaging, are attractive to youth, which in turn is associated with greater interest in trying them. Regulators should consider limiting the flavor capsules innovation when aiming to reduce the appeal of tobacco for youth.

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POS4-28
WHO WANTS TO QUIT E-CIGARETTES? A STUDY OF YOUTH AND YOUNG ADULTS

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INTRODUCTION: Electronic cigarettes (e-cig) are becoming increasingly popular, especially among youth and young adults, but little is known about who wants to quit e-cigs. METHODS: An online survey of e-cig ever users among youth and young adults (aged 15-29) in Ontario, Canada was conducted between March and April 2015. Factors associated with intention to quit e-cigs among those who used e-cigs in the last 30 days were examined using multivariable logistic regression. RESULTS: Of the eligible 151 participants who used e-cigs in the last 30 days, 46% (n=71) wanted to quit e-cigarettes. Young adults (aged 20-29) were more likely to intend to quit e-cigs (54% vs. 32%) than youth (aged 15-19). Married participants were the more likely to intend to quit e-cigs (65% vs. 40%) than those not married. Main reasons for participants’ intention to quit e-cigs included “will not need e-cigs once I quit tobacco cigarettes” (59%), “it might be harmful to my health” (45%) and “cost” (39%). Multivariable logistic regression showed that participants who perceived themselves associated to e-cigs (adjusted odds ratio, AOR=3.12, 95% confidence interval, CI: 1.37-7.11) and those who used e-cigs to quit or reduce tobacco smoking (AOR=5.59, 95% CI: 1.64-7.84) were more likely to intend to quit e-cigs, compared to their counterparts. Those who reported enjoying e-cig flavor, however, were less likely to intend to quit e-cigs (AOR=0.33, 95% CI: 0.13-0.86), compared to those who did not report enjoying the flavor. Other factors, including sociodemographic factors, tobacco smoking, using other tobacco products, patterns of e-cig use (frequency, contents, types and design), perceived health risk of using e-cigs, and environmental factors (e.g., family and friend using e-cigs) were not significantly associated with intention to quit e-cigs. CONCLUSIONS: Many youth and young adult e-cig users intend to quit e-cigs. Perceived addiction to e-cigs, using e-cigs to quit tobacco smoking and e-cig flavor were significant factors associated with intention to quit e-cigs. More research is needed to find effective ways to help youth and young adults to quit e-cigs.

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POS4-29
IT’S NOT A QUIT ATTEMPT IF IT DOESN’T LAST A DAY? PREDICTORS OF SERIOUS QUIT ATTEMPTS OF LESS THAN 24 HOURS DURATION

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INTRODUCTION: Many researchers use a definition of quit attempt that requires a quit attempt to last longer than 24 hours. This definition has been put into place in order to make a distinction between substantive quit attempts and trivial quit attempts. However, by requiring a length of abstinence to make a quit attempt, this measure may be systematically biasing results against those who have the greatest difficulty in quitting and are unable to maintain a quit attempt for more than 24 hours. METHODS: We compiled data from 4500 adult smokers from the Ontario Tobacco Survey, a population-representative cohort of smokers in Ontario, Canada. We examined factors associated with making a self reported quit attempt, comparing those quit attempts that were more than 24 hours to those that were less. Guided by social cognitive theory, we chose the following covariates measured at the time point prior to the reported quit attempt: socio demographic characteristics, smoking addiction, quitting history, intentions, beliefs, and social and environmental factors. We examined the bivariate associations with each of the predictors, and then developed a fully adjusted model using Generalized Estimating Equations with a Poisson link. We conducted analysis using Stata 14 accounting for the complex survey design. RESULTS: Among 2974 quit attempts over the context of the study, 11.1% did not last one day. Predictors quitting for less than 24 hours were higher heaviness of smoking index score, belief that it
was hard to quit, belief that it would be hard to refrain from smoking, being a daily smoker, having lower level of education, and older age (p<0.05). In the fully adjusted model, higher levels of education, prior pharmaceutical cessation aid use, being a daily smoker and older age were independent predictors of failure to successfully abstain from smoking for 24 hours. CONCLUSIONS: Smokers who have difficulty abstaining from smoking for 24 hours for a self-described serious quit attempt are systematically different from smokers who were able to abstain for at least 24 hours. Excluding quit attempts of less than one day will systematically bias estimates of serious quit attempts. There was no evidence to suggest that the use of the 24 hour criterion was able to identify more serious quit attempts than simple self-report.

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POS4-30
WEB-BASED ELECTRONIC CIGARETTE AVAILABILITY AT RETAIL LOCATIONS IN RICHMOND, VA

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OBJECTIVE AND PURPOSE: Electronic cigarettes are the fastest growing form of tobacco use in the United States, however current policies regarding sales, retail locations, and product use in localities are either new or non-existent. Little information is known about how, where, and by whom products are sold due to the large number of products, companies, and brands. The purpose of this study is to examine e-cigarette retail location density in the Richmond, Virginia Metropolitan Statistical Area (MSA) (13 counties/4 principal cities). METHODS: Location addresses were collected for three popular e-cigarette brands (Njoy, Blu, GreenSmoke) using embedded maps and location finders directly from brand websites. Collected data was aggregated and cleaned for duplicate removal. Data from the 2014 Census Estimates was used for each county examining: total land area (square miles) and population. Based on the number of locations within each county, densities were calculated for number of shops per square mile and number of shops per resident. RESULTS: The total population for the Richmond MSA 1.2 million individuals with 745 people per square mile, 1,302 persons per shop (range: 24 - 2,687), and an average shop density of 1.04 per square mile (range: 0 – 5.77). Four principal cities in the Richmond MSA had the highest density of shops per square mile with Richmond City having over five shops per square mile. Additionally, high population density areas had the fewest residents per shop (Richmond: 631, Colonial Heights: 493, Hopewell: 765, Petersburg: 654), indicating that the retail locations were more frequent with higher populated areas. Shop geographic density was calculated based on number of shops per square mile. All four principal cities had the highest density in the metro area (Richmond: 5.77, Colonial Heights: 4.79, Hopewell: 2.53, Petersburg: 2.53, Henrico county: 0.73). DISCUSSION/IMPLICATIONS: Currently, the only policy or law in Virginia pertaining to e-cigarettes is restriction of sales under age 18. The findings of this study indicate that e-cigarettes are relatively available to the population, even in rural areas, however availability in highly populated areas was much higher. Additionally, there were fewer persons per shop found in the highly populated urban areas, as these areas of the Richmond MSA are often lower socioeconomically than surrounding counties.

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POS4-31
CHARACTERISTICS, USE PATTERNS, AND PERCEPTIONS OF ELECTRONIC CIGARETTE USERS WHO WERE NEVER TRADITIONAL CIGARETTE SMOKERS

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INTRODUCTION: Previous reports on electronic cigarettes (e-cigs) found that users tend to be current or past cigarette smokers. The aim of this study was to better understand the characteristics of e-cig users who were never traditional cigarette smokers. METHODS: E-cig users completed an online survey including demographics, details of their e-cig use, and e-cig preferences. Embedded in the quantitative survey was the open-ended question, “Please provide any additional information you believe a public health researcher should know, in order to understand the electronic cigarette.” Participants included in the analysis reported never having been a traditional cigarette smoker and had not used traditional cigarettes in the past 7 days. Qualitative responses were analyzed using the Constant Comparative Method for which major themes were derived.

CONCLUSIONS: Of 1,674 survey respondents with complete data, 69 (1%) met criteria for inclusion in this analysis. 21 participants (0.31% of overall sample) had never used any tobacco products. Participants (n=69) were 71% male, 79.7% white, had a mean age of 30.4, and used their e-cig a mean 18.8 days out of the past 28 with time to first use of 90 minutes, and a median of 3 uses per day. The average Penn State E-Cig Dependence Index Score was 3.7, indicating little to no dependence. Themes that emerged from the qualitative analysis were Reducing Other Tobacco Product Use (e.g. “I began use of the e-cig when I wanted to quit chewing, and within a month, I quit craving feelings for tobacco products”), Less Perceived Risk (e.g. “I wanted to try tobacco once during my lifetime without the effects of actual smoke, e-cigs have provided that opportunity”), and Hobby (e.g. “It is a hobby and a recreational activity”). Less prominent themes included viewing e-cigs as a Weight Control Aid (e.g. “I began using the e-cig as a dietary aid to fight off food cravings”) or using them for Relaxation (e.g. “very satisfying while under stress at work”).

The majority of e-cig users who were never traditional cigarette smokers had used other tobacco products. These users also exhibited low levels of e-cig dependence.

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POS4-32
POLYTABACCO USE AMONG SMOKERS LIVING WITH HIV DRAWN FROM A NATIONALLY REPRESENTATIVE SAMPLE

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The prevalence of smoking is disproportionately high among persons living with HIV (PLWH) and is associated with adverse health outcomes and increased mortality. Polytobacco use (PTU), and correlates of PTU, remains understudied among PLWH. In the general population, PTU is associated with an increased risk of tobacco-attributable death and disease relative to use of a single product, increased risk of nicotine addiction, and may create unique challenges for cessation. These challenges underscore the need to examine PTU among vulnerable populations, like PLWH. Data came from the 2005-2013 National Survey on Drug Use and Health, and included PLWH who reported current tobacco use (n=295). Logistic regression analyses were used to describe associations between socio-demographic, substance use, and mental health characteristics with PTU. Single product use was reported by 82.9%, and 17.1% reported PTU. Among single product users, 94.8% used cigarettes, 3.9% used cigars, and 1.2% used smokeless tobacco. Among PTUs, 88.7% used 2 tobacco products and 11.3% used more than 2 products. The most common combination of products included cigarettes and cigars (85.0%), and cigarettes, cigars, and smokeless tobacco (11.3%). In adjusted analyses, Hispanic individuals were less likely than Caucasian individuals (aOR=0.26, 95% CI=0.07-0.98) and individuals with lifetime anxiety were less likely than those without (aOR=0.14, 95% CI=0.04-0.49) to be PTUs. Individuals who reported enjoying testing themselves by doing risky things were significantly more likely to be PTUs (aOR=4.77, 95% CI=1.60-14.20). This analysis is one of the first to examine PTU and its correlates among PLWH, and is the first to use a nationally representative sample. The prevalence of PTU was similar to that found in the only other examination of PTU among PLWH, and more than double what is found among the general population. Given the high prevalence of PTU among PLWH and the negative outcomes associated with this behavior, special attention should be placed
POS4-33
SMOKERS WHO DON'T IDENTIFY AS SMOKERS: A NATIONALLY REPRESENTATIVE SURVEY OF ADULTS IN THE U.S.

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The effectiveness of many tobacco control efforts requires cigarette smokers to self-identify as smokers when asked by clinicians, in surveys, or in response to mass media messages. However, a subset of smokers do not identify as smokers (non-identifying smokers, NIS). NIS are likely nondaily smokers (i.e. smoking 1-29 of past 30 days), which is increasing as daily smoking decreases in the U.S. Limited research exists to address this growing public health challenge. A nationally representative probability sample of adult tobacco users, nondaily smokers and adult non-tobacco users was interviewed in a cross-sectional survey in 2011 as part of an online panel maintained by GfK. Results indicate that NIS reported current smoking but did not consider themselves to be “smokers.” Of the smokers in the sample, 8% were NIS. Compared with other smokers, NIS were significantly younger, more likely to be male and college graduates and had higher incomes. Multivariate logistic regression analyses among current adult smokers showed that younger age 18-29 (aOR=4.9, p<.05), being a college graduate (aOR=4.9, p<.05), cigarettes per day CPD (aOR=8.0, p<.05), nondaily smoking (aOR=7.1, p<.001), never expecting to quit (aOR=3.9, p<.05) and being extremely/very open to trying e-cigarettes (aOR=2.0, p<.01) were associated with NIS. Consistent with previous research, these results show that NIS were more often younger, male, college graduates and nondaily smokers compared with other adult smokers. Our results add that NIS report higher income, fewer CPD, less nicotine dependence, and less openness to e-cigarettes than other smokers. This study provides national context for understanding NIS. We found that compared with other smokers who identify with the term “smoker,” NIS is associated with lower cigarette use and never expecting to quit. This is concerning since light and nondaily smoking carry nearly the same risk for cardiovascular disease as daily smoking and there is a dose-response relationship between cigarette smoking and lung cancer. Public health efforts are needed to adequately monitor and address this challenging population of smokers.

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POS4-34
 PATTERNS OF POLYTABACCO PRODUCT USE IN U.S. YOUTH AND YOUNG ADULTS, 2011-2013

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As cigarette smoking has decreased among youth and young adults in the U.S., the prevalence of non-cigarette and polytobacco product use has increased. The purpose of this research was to identify common past 30-day polytobacco use patterns utilizing data from youth (grades 6-12) respondents to the 2011-2013 National Youth Tobacco Survey (NYTS) and young adult (aged 18-24) respondents to Waves 1-5 (2011-2013) of the Truth Initiative Young Adult Cohort Study (TIYAC). Past 30-day use of the following tobacco products was assessed: cigarettes, e-cigarettes, any type of cigar, smokeless tobacco, hookah, and other tobacco products (pipe, bidis, kreteks, dissolvable tobacco, and snus). A user-generated statistical program in R was used to assess all possible combinations of product-specific and polytobacco use. The top five patterns of past 30-day use in the combined NYTS dataset were: 1) exclusive cigarette use (21%), 2) exclusive cigar use (13%), 3) dual use of cigarettes and cigars (11%), 4) exclusive smokeless use (5%), and 5) poly-use of cigarettes, cigars, smokeless tobacco, and other tobacco products (4%). The top five patterns of past 30-day use in the combined TIYAC dataset were: 1) exclusive cigarette use (50%), 2) exclusive cigar use (10%), 3) dual use of cigarettes and cigars (9%), 4) exclusive hookah use (7%), and 5) dual-use of cigarettes and e-cigarettes (3%). The prevalence of exclusive cigarette use decreased from 24.9% in NYTS 2011 to 17.1% in NYTS 2013 and from 54.2% in TIYAC Wave 1 to 45.1% in TIYAC Wave 5. Exclusive hookah use became increasingly popular among 18-24 year olds over time, with this pattern breaking into the top 3 in Wave 3 and becoming the 2nd most popular pattern in Wave 5. Exclusive hookah use also emerged as the 4th most popular pattern in TIYAC Wave 5. Of note, 87% of e-cigarette use occurred in polytobacco users in the 2011-2013 NYTS. As non-cigarette tobacco products become increasingly popular among current tobacco users, further research is needed to identify predictors and correlates of specific tobacco use patterns in youth and young adults.

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POS4-35
EXPLAINING VARIATION IN OUTCOMES OF COMPLEX INTERVENTIONS FOR SMOKING CESSATION

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Tobacco and tuberculosis (TB) both contribute sizably to the burden of disease, not only individually but also by influencing each other’s disease related kinetics. Optimal delivery of behavioural interventions (BI) for tobacco cessation is of utmost importance. However, identification of the “active ingredients”, for optimising BI remains a challenge, as it requires robust fidelity measures. Such measures could also assess quality of delivery and explain cluster level variation in individual patient outcomes. This study is the first attempt at developing and validating a fidelity index, and utilising it to explain variation in outcomes of complex interventions. An observational study was conducted in two districts of Pakistan in 2014. Eighteen TB clinics were enrolled and 154 patient-provider interactions audio-recorded. A fidelity index was developed to assess providers’ adherence to ingredients of BI and their ‘quality’ of delivery. Fidelity index was tested for inter-coder reliability using Krippendorff alpha, coherence of scale items using Principle Components Analysis (PCA), and assessment of providers’ differences in BI delivery using G-study. Logistic regression was conducted to analyse whether fidelity scores explain the variation in participants’ smoking quit rates. The inter-coder reliability was 0.80 for ‘Adherence’ and 0.66 for ‘Quality’. The scale item loading of PCA showed that the index was coherent in measuring the same underlying domains. G-coefficients of 0.985 (for adherence) and 0.980 (for quality) indicated that the index was highly reliable in differentiating between providers practice of delivering BI. Adhering to the content of BI by the providers did not necessarily affect the quit rates of participants (Odds ratio 0.76; 95% CI: 0.57-1.01); however, the better the quality of intervention delivered by the provider, higher were the quit rates of the participants (Odds ratio 1.50; 95% CI: 1.06-2.12). Fidelity index could be a very useful process evaluation tool and can aid optimal delivery of complex tobacco cessation interventions.

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POS4-36
CHEMICAL CHARACTERIZATION OF ORAL TOBACCO PRODUCTS

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Oral tobacco product (OTP) use is increasing. OTPs are often perceived as safer alternatives to smoking, or by smokers as a bridge to quitting (switching) or reducing smoking (dual use). Dual use is common among adolescents. In terms of exclusive use, switching from smoking to smokeless tobacco use is rare, whereas switching from smokeless tobacco use to smoking is more common among adolescents and adults. Some OTPs do not look like tobacco and feature candy-like flavors that may appeal to youth. These products may increase tobacco use initiation, frequency of use, and hamper smoking cessation. We characterized the
organic harmful and potentially harmful constituent (HPHC) content of 13 diverse products selected from an on-going clinical study examining abuse liability of OTPs. Product forms include a chewable polymer disc, dissolvable tablet, moist snuff (sachet and loose), snus (U.S. and Swedish), herbal nicotine-free, and medicinal nicotine as the control. Products were selected based on popular use in the U.S. or novelty, and to allow toxicity and abuse liability comparisons between sachet and loose, same-brand flavored (wintergreen) and unflavored, and nicotine-containing and nicotine-free products. Total nicotine ranged from <0.1 (herbal) to 15.1 mg/g wet (Grizzly Natural). Among the nicotine containing products, levels of unprotonated nicotine, the more addictive “free-base” form, ranged from 0.01 (Hawken) to 5.06 mg/g wet (Grizzly Wintergreen). Tobacco specific nitrosamines (TSNAs) were detected in all products examined except the medicinal nicotine, polymer disc, and herbal products. Detectable TSNAs levels were at least 50% lower in the Swedish snus as compared to the other products, except the dissolvable tablet, which were four times lower than the Swedish snus. Detectable levels of benzo(a)pyrene ranged from 19.4 – 44.7 ng/g wet and were not detected in snus, polymer disc, dissolvable and medicinal nicotine products. A semi-quantitative analysis of the 20 most highly concentrated volatile organic compounds in the headspace above each product showed nicotine, ethanol and high concentrations of a wide variety of flavor compounds.

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**POS4-37**

**“IT’S LUDICROUS” – HOW CURRENT SYSTEMS FAIL TO SUPPORT CLINICIANS IN IMPLEMENTING SMOKING CESSATION GUIDELINES IN PREGNANCY**

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**BACKGROUND:** Pregnancy offers an ideal opportunity to support smoking cessation as women are highly motivated to quit for the sake of their baby. Despite this, guidelines for smoking cessation support during pregnancy are poorly implemented. Within a larger study which systematically assessed barriers and enablers to provision of smoking cessation support to pregnant women, this paper explores how organisational ‘systems’ supported or hindered implementation. **DE-SIGN:** Semi-structured interviews were conducted with seven key informants and 20 midwives and obstetricians working in antenatal care across the public health system in NSW, Australia. Interviews used the Theoretical Domains Framework to comprehensively assess the influence of 14 separate domains on clinician behaviour and elicit participants’ perceptions of barriers and enablers to implementing the guidelines. Findings were analysed thematically. This paper presents the findings related to organisational systems. **RESULTS:** Systems included computer and paper based client record systems, institutional policies, monitoring systems, skills and knowledge based training. Participants described how systems failed to support guideline implementation. For example whilst the statewide database for recording client information ensured clients were asked and assessed at their initial visit, advising, assisting and arranging follow up were less supported, and the database did not proactively support addressing smoking at subsequent antenatal visits. Some health services added stickers to their paper records in an attempt to address these shortcomings. Variation in smoking cessation training was marked. An absence of systems for monitoring or recognising/rewarding implementation was common. **CONCLUSIONS:** The study identified multiple system level barriers to guideline implementation, providing an opportunity to develop interventions to support clinicians to improve guideline implementation.

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**POS4-38**

**ATTENTIONAL BIAS TO SMOKING CUES PREDICTS AD LIB SMOKING IN THE LAB**

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Current theoretical models of addiction posit that attentional bias (AB) toward substance-related cues plays a causal role in the development and maintenance of drug-taking behavior. While prior studies have shown that AB to smoking cues predicts smoking relapse following a cessation attempt, we are unaware of studies examining the relationship between AB and smoking behavior in continuing smokers. Here, we examine AB to smoking cues using an eye tracker (Applied Science Laboratories) and urge to smoke during high- and low-craving states, and we determine whether urge to smoke and AB predicts ad lib smoking behavior in the lab. We hypothesized that 1) high-crave participants would report increased urge to smoke, show a stronger AB to smoking cues, and demonstrate greater smoking behavior than low-crave participants, and 2) across conditions, increased urge to smoke and enhanced AB to smoking cues would predict greater smoking behavior. Participants were daily smokers (90 participants, 52.2 percent male) aged 18 to 50 who were randomly assigned to a high- or low-craving condition. High-crave participants were 12-hours smoking abstinent and exposed to in vivo cigarette cues; low-crave participants smoked within 15 minutes of the session and were exposed to control cues. After cue exposure, all participants took part in the AB task. They were shown pairs of smoking and matched control pictures while their eye movements were monitored. As expected, high-crave participants reported significantly greater urges to smoke and showed a decreased latency to smoke compared to low-crave participants. Importantly, greater self-reported urges to smoke and enhanced AB to smoking cues predicted a decreased latency to smoke. Contrary to predictions, high-crave participants did not demonstrate a stronger AB to smoking-related cues compared to low-crave participants. These findings extend previous studies to suggest that AB plays a role not only in relapse to smoking but also in the maintenance of smoking behavior among active smokers.

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**POS4-39**

**ASSESSING 30-DAY QUANTITY-FREQUENCY OF U.S. ADOLESCENT CIGARETTE SMOKING AS A PREDICTOR OF ADULT SMOKING 14 YEARS LATER**

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**AIM:** To develop better measures of monthly tobacco cigarette smoking, predictive of future monthly and future daily smoking. **METHODS:** Data from the United States National Longitudinal Study of Adolescent and Adult Health, tracking adolescents, grades 7-12 (ages 12-21) over 14 years were analyzed. Wave 1 past 30-day non-daily smokers were classified using a quantity-frequency measure: the product of cigarettes smoked per day by the number of days smoked in the past 30 days. **RESULTS:** Categories of non-daily smokers include smokers (1-5 [low], 6-60 [moderate], and 61+[high] cigarettes/month) emerged as a linear predictor of future monthly smoking (55.6%, 40.4%, 23.0%, respectively, versus 25.5% daily smokers reporting no monthly smoking 14 years later, R²=0.99). Categories of never smokers, ever smokers but not past 30-day (ES-N30d) plus the low, moderate and high non-daily monthly categories were combined into a non-daily smoking index (NSDI). ES-N30d and low NSDI smokers were similar in terms of monthly smoking 14 years later (OR=4.80, 95%CI=3.41-6.75 and OR=4.53, 95% CI=2.95-6.94, respectively), as were high NSDI (OR=1.03, 95%CI=0.56-1.90) and daily smokers (reference group) when estimating odds of future monthly smoking. As NSDI category increased, odds of future (14 years later) daily smoking also increased. **CONCLUSIONS:** Lower levels of non-daily smoking at ages 12-21 predicted lower likelihood of future monthly smoking; non-daily smokers smoking more than three packs of cigarettes per month were just as likely as daily smokers to be smoking 14 years later. Compared with those who never smoked a whole cigarette, all non-daily smokers had increased odds of future daily smoking. High NSDI smokers might be considered similar to daily smokers for surveillance and cessation interventions.

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ELECTRONIC CIGARETTE USERS: A CONCEPT MAPPING STUDY

POS4-41
REASONS FOR USING FLAVORED LIQUIDS AMONG ELECTRONIC CIGARETTE USERS: A CONCEPT MAPPING STUDY

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BACKGROUND: Electronic cigarettes (ECIGs) heat a liquid to produce an aerosol for inhalation. The liquid often contains a combination of nicotine, propylene glycol, vegetable glycerin, and chemical flavorants. Few studies have attempted to examine the role flavors play in ECIG use. The purpose of this study was to use concept mapping to characterize and describe the reasons ECIG users use flavored liquids in their devices. METHODS: Experienced ECIG users (N=46) recruited online were invited to complete a three-step process including brainstorming, sorting, and rating tasks using an online program. Participants first brainstormed responses to the focus prompt: “A specific reason I use flavored e-liquid in my electronic cigarette product is...” Researchers reviewed the statements continuously until saturation was reached. After removing duplicates, the final 107 statements were sorted by each participant into piles of similar content. Participants then rated each statement on a 7-point scale (1 - Definitely not a reason to 7 – Definitely a reason) based on a prompt: “This is a specific reason why I used flavored e-liquid in my electronic cigarette product in the past month.” A cluster map and cluster rating map were generated based on participants’ sorting and ratings and compared using t-tests. RESULTS: Multivariate analysis generated a map revealing five clusters of statements characterizing the reasons ECIG users used flavored liquids. The cluster themes were increased Satisfaction/Enjoyment, Better Feel/Taste, than Cigarettes, Variety/Custimization, Food Craving Suppression, and Social Impacts. Statements in the Increased Satisfaction/Enjoyment and Better Feel/Taste than Cigarettes clusters were rated significantly higher as reasons for using flavors than other clusters (p<.05). Some statements indicated flavors were perceived as masking agents for nicotine and made ECIG use more palatable.

CONCLUSIONS: ECIG users appear to use flavored liquids for many reasons. Some user-generated statements suggested flavors may serve a potential role to increase risk of ECIG-related nicotine addiction and/or compulsive use and should be examined further.

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POS4-42
INDOOR AIR CHEMISTRY: AN EXPLORATORY STUDY ON E-CIGARETTES SHOWS NO NEGATIVE IMPACT ON INDOOR AIR QUALITY

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The impact on indoor air quality of using e-cigarettes is expected to be very different to combustible cigarette use and has been the subject of numerous research papers. The available published work is often of limited value in judging the impact of e-cigarettes on indoor air quality since they were either conducted in uncontrolled environment (or environments with limited control) or were based on theoretical calculations. Philip Morris International built an environmentally controlled, furnished room and developed analytical methods to measure air pollutants under diverse simulated indoor environments focusing on: (i) ISO measurement standards for Environmental Tobacco Smoke and, (ii) selected carbonyls and volatile organic compounds. The room is fully controlled and adjustable in terms of air renewal and the analytical methods have been developed, validated and accredited under ISO 17025. An exploratory study on Indoor Air Quality for e-cigarettes was performed focused on relevant analytes in the context of e-cigarettes, i.e. particulate matter, nicotine and selected carbonyls. Three different e-cigarette products were tested, representing a range of e-liquid compositions and product designs. Multiple replicates with panelists, under one simulated condition (i.e. residential with air renewal set at 1.2 per hour, according to CEN-EN-15251:2007) were performed, including “background” sessions (no products used), against which vaping results are compared. During vaping sessions, panelists used the assigned product once every 40 minutes for 10 minutes duration over the course of 5 hours. Results show that all the analytes measured when e-cigarettes are used were not different than background levels, with the exception of nicotine, which was detected at very low levels. The levels of nicotine measured varied between sessions, which can be explained by variability in e-liquid consumption. Nicotine levels ranging from 0.3 μg/m³ to 6.5 μg/m³ were observed and were directly correlated with the amount of liquid consumed during the different sessions. Based on these results, we conclude that using e-cigarettes indoors does not negatively impact air quality.

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POS4-43
IMPULSIVITY AND MENTAL HEALTH OUTCOMES AMONG USERS OF CIGARETTES AND CIGARS

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Depressive symptoms are associated with tobacco use, as well as with concurrent smoking and alternative tobacco product use. Impulsivity has also been identified as a correlate of alternative tobacco product use. The purpose of this study was to examine tobacco user subgroups- cigarette-only users, cigar-only users, and those who exclusively used both cigarettes and cigars- in order to determine differences in their mental health and risk taking outcomes. Participants were 558 students in a larger study, aged 18-29 (M=21.43; SD=2.87; 53.7% female; 48.4% non-Hispanic white, 34.9% Hispanic, 11.8% Asian, 8.4% African American/black and 4.2% other) attending one of 24 colleges in Texas. Students completed an online survey assessing tobacco use, mental health, and risk taking behaviors.
POS4-44
INTERACTING WITH LATINO SMOKERS VIA TEXT-MESSAGING

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BACKGROUND: Latinos are the fastest adopters of mobile technology. Nevertheless, there have been minimal text-message smoking cessation interventions among Latinos despite their effectiveness for quitting smoking. OBJECTIVE: To assess level of interactivity in a two-way smoking cessation text-message intervention among Latinos. METHODS: Promotoras de Salud identified 52 Spanish-speaking Latino smokers in the community. Of these, 20 were recruited and completed baseline assessment. Participants were offered a 26-week text-message intervention structured in 3 stages (pre-quit, quit day and post quit), including automated scheduled text-messages and interactive texting with a smoking cessation counselor (Ad Hoc messages). In addition, the program prompted smokers to request nicotine replacement therapy (NRT) at no cost. RESULTS: Participants had a mean age of 41.7 years (SD 14.7), 70% were male and 80% smoked <9 cigarettes/day. The content of the Ad Hoc messages included 7 major themes: Overall satisfaction with the program (39.4%), well-being (16.5%), quitting status (16.5%), gratitude (15.7%), reaching out for NRT (5.5%), cravings/anxiety (3.2%), and negative thinking during the process of quitting (3.2%). At week 8, 35% of participants self-reported they had been quit since their set quit date. CONCLUSION: Latinos have higher engagement in a smoking cessation text-message intervention compared to other racial and ethnic groups. Interactive smoking cessation text-message interventions and NRT offers a promising mode of reaching this highly motivated and underserved population.

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POS4-45
A SYSTEM DYNAMICS MODELING APPROACH FOR ASSESSING THE POTENTIAL HEALTH IMPACT AS RESULT OF LAUNCHING A NEW NICOTINE PRODUCT IN A MARKET

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INTRODUCTION: In 2012 the FDA suggested using mathematical models as tools for assessing the impact in terms of population health outcome of releasing new nicotine or tobacco products. BAT in collaboration with Ventana Systems UK has developed a population model based on System Dynamics methodology to provide projections of the potential health impact of launching a new product. METH-OIDS: We use a system dynamics approach for model development. A status quo scenario where the new product does not exist is compared to the counterfactual scenario in which the new product has been introduced. Normality of smoking and product use effects are studied through feedback mechanisms. Model functionalities are illustrated using e-cigarettes as the alternative product, all-cause mortality as health outcome and, the UK as the population of interest. RESULTS: Data sources and model assumptions are presented to highlight data scarcity and inconsistencies between different public data sources. Results from sensitivity analysis reveal tipping points for benefit/burden depending on the value of different parameters and the relative importance of model parameters to influence the final outcome. CONCLUSIONS: Introduction of assumptions was required due to the difficulty to find appropriate data sources to inform the model. Data requirements for this type of modeling would benefit from the inclusion and public release of relevant measurements on nicotine products from nationwide studies. Our model suggests that System Dynamics could be a useful approach to assess the potential health effects of nicotine products when epidemiological data is not available.

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POS4-46
CHEMICAL ANALYSIS AND HEALTH ASSESSMENT OF AN ALTERNATIVE TOBACCO PRODUCT (MIDWAKH)

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Midwakh is known to be one of the most extensively consumed tobacco products in the United Arab of Emirates (UAE) and the Arabian Gulf region. There is no scientific research published on the chemical composition of midwakh and its tobacco (Dokha) and only very little was done to investigate its impact on human health and the environment. In this study, three different types of Dokha were used: cold, mild, and hot. Inorganic and organic analyses for the raw materials and the final smoked product were done. The trace metals content in raw Dokha was analyzed using Inductively-Coupled Plasma-Optical Emission Spectroscopy (ICP-OES) and Energy-dispersive X-ray Spectroscopy-Scanning Electron Microscope (SEM/EDS). The results showed the presence of toxic metals such as cobalt, cadmium, chromium, and lead in amounts classified as harmful to human health. In addition, other metals like iron and manganese were detected in noticeable amounts. The organic composition was extracted using a range of solvents of different polarities followed by Gas Chromatography-Mass Spectrometry (GC-MS) analysis. The raw Dokha tobacco showed the presence of toxic and harmful compounds to health. The smoke was then generated using IREADYCo device that simulate human smoking and the smoke samples were collected on Tenax and activated carbon adsorbent tubes followed by analysis using Thermal Desorption-Gas Chromatography-Mass Spectrometry (TD-GC-MS). Chemical analysis of the volatile organic compounds showed the presence of a large number of compounds that have direct and/or indirect health effects including carcinogens, toxicants, and irritants. Also, many of the identified compounds are known to have psychological effects.

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POS4-47

"AIN'T NOTHING EASY ABOUT QUITTING": PERSPECTIVES ON TOBACCO USE AND TOBACCO CESSATION FROM YOUNG BLACK SMOKERS

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BACKGROUND: Smoking is a significant public health issue, particularly among youth. More than 90% of smokers initiate smoking in their teenage years, which reinforces that youth and young adults are a vulnerable population in tobacco control research. Current estimates predict that if youth smoking rates continue at the current level, 5.6 million young adults today will die prematurely from a tobacco-related cause of mortality. Adolescents are exceptionally vulnerable to nicotine and each day upwards of 700 young people across America become regular smokers. This study aims to gain a deeper understanding of the smoking and quitting experiences of young people in their own words. METHODS: We conducted a convergent parallel mixed methods pilot study with 13-20 year olds in the East End of the city of Pittsburgh, PA. Fifty-eight participants completed a survey about experiences with smoking, health behaviors, and sociodemographic data. Participants were recruited through flyers at community events and school settings. RESULTS: The majority of the sample self-identified as African American (61.8%) and were male (56.8%), with 29.3% were current tobacco smokers (n=17). Almost half (44.8%) of current smokers reported they have tried to quit smoking at least once, the majority reporting 1-3 past quit attempts. Qualitatively, young people described feeling like they were addicted to cigarette smoking. Study participants cited easy access to tobacco products, family and friends social smoking, and stressful life situations as factors that tempted them to smoke again. Overall focus group participants had negative opinions of traditional cessation aids (patches, gum), and cited personal experiences and family/friend experiences as part of their reticence to use cessation aid products. CONCLUSION: Youth and young adults have experiences with tobacco use and cessation that differ from adult smokers. It is important to better understand their experiences to enhance or develop more effective cessation programs.

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POS4-48

FACTORS ASSOCIATED WITH DUAL USE OF CONVENTIONAL AND ELECTRONIC CIGARETTES: FOCUS GROUP STUDY AMONG CURRENT ADULT SMOKERS

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INTRODUCTION: There is a rising trend in use of electronic cigarettes (e-cigarettes) among adult current smokers. Yet, harms and benefits of dual use are still unclear. Effects of e-cigarette use on smoking habits depend on patterns and reasons for use. This study explores factors associated with experimentation and regular use of e-cigarettes among current cigarette smokers. METHODS: We conducted 2 focus groups with 14 current smokers who had ever used e-cigarettes. Group discussions were audio recorded and transcribed. Thematic analysis was used to identify themes related to experimentation, regular use of e-cigarettes, and reasons for use. RESULTS: E-cigarette experimentation was associated with two types of factors: internal and external. Internal (individual) factors were curiosity about e-cigarettes, craving for nicotine, and perceived social benefits (coolness). External (circumstantial) factors which facilitated experimentation were convenience and convincing persons. We also identified internal and external factors associated with regular use. The internal factors were related to e-cigarettes' ability to satisfy nicotine craving and their perceived pleasing attributes: pleasant sensory and tactile experience, social benefit, and the perception of reduced harm. The external factor for regular use of e-cigarettes among current smokers was convenience. Two main patterns of use emerged from the data: complementary and replacement. The overall consensus was that e-cigarettes and conventional cigarettes were used “hand in hand” and that e-cigarettes were complementary to conventional cigarettes. However, e-cigarettes were also used to replace conventional cigarettes with the intention to quit. CONCLUSION: Curiosity, coolness, craving, and convenience in the presence of convincing individuals lead current smokers to experiment with e-cigarettes. Reasons for becoming regular users were convenience and enjoyment of e-cigarettes. Social network is an important communication channel to deliver information to potential users of e-cigarettes. Findings could improve survey item development for future research on patterns and reasons for use.

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POS4-49

DOES CLOUD CHASING SPILL OVER: THIRDHAND VAPOR FOUND IN VAPOR SHOP NEIGHBORS

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Indoor use of electronic cigarettes is of concern due to potential harmful environmental exposures to bystanders and workers in the form of secondhand and thirdhand vapor (THV); however, limited data exists. In the present study, we conducted interviews and surface nicotine analysis at local electronic cigarette shops (vapor shops), their adjoining neighbor and an across-the-street control. We sought to characterize the in-store use of electronic cigarettes (ECs), the levels of nicotine on select surfaces in vapor shops, and the potential intrusion of EC vapor into adjoining shops. Control shops provided background levels of surface nicotine in retail establishments. This study included all known vapor shops within a 25 mile radius of Oklahoma City with adjoining shop (i.e. no free standing buildings were considered). Of the 56 identified vapor shops, 35 were approached in a randomized order; 14 consented. At these 14 locations, 8 adjacent, and 10 control shops consented. THV was collected by surface wipe sampling of storefront windows and other vertical surfaces (typically a display cabinet). Samples were analyzed through GC-MS for nicotine. Vapor store interviews were also conducted to determine confounders such as cleaning frequency. Mean nicotine levels on windows were significantly higher at vapor shops (128 ±104 ng/m2) than adjacent (29 ±41 ng/m2; p<.006) or control shops (37 ±36 ng/m2; p<.007). Mean nicotine levels on other vertical surfaces were significantly higher at vapor shops (85 ±91 ng/m2) than control shops (28 ±39 ng/m2; p<.049) but not adjacent shops (103 ±245 ng/m2; p>.85). EC vapor was witnessed intruding into one adjoining shop through the ventilation. Nicotine levels on often cleaned surfaces (display cabinets) within vapor shops were maintained at control levels while less frequently cleaned surfaces (storefront windows) showed elevated contamination. In adjacent shops, less frequently cleaned surfaces had higher mean nicotine levels than vapor stores or controls, but due to large variability was not significantly different from either. Awareness of need for cleaning plays a strong role in reducing THV accumulation.

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POS4-50

DUAL CIGARETTE AND E-CIGARETTE USE: EXAMINING PEER TOBACCO USE AND TOBACCO USE ATTITUDES

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INTRODUCTION: Adolescents and young adults are highly influenced by the peer context and social norms. Young adolescents who have more friends who smoke and perceive smoking as socially acceptable are at increased risk for smoking. However, little is known about the peer context and social norms of electronic nicotine delivery system (ENDS) users or dual users of ENDs and cigarettes. This study examined differences among young adult ENDs only users and dual users...
of ENDS and cigarettes on peer smoking, inclination to date someone who uses tobacco, social acceptability of smoking, and home smoking environment. METH- OD: Participants were from a sample of 5,482 college students from one of 24 col- leges in Texas, who completed an online survey. A group of 370 students (Mage = 21.07; SD = 2.89; 61.4% female; 45.3% White) who indicated using ENDS prod- ucts only in the past 30 days, and ENDS and cigarettes products only in the past 30 days, were included in the analyses for this study. RESULTS: Of the 370 stu- dents, 54.1% were current users (past 30-day users) of ENDS products only, and 45.9% were current dual users of cigarettes and ENDS products only. Independent sample t-tests indicated that compared to ENDS only users, dual users were sig- nificantly more likely to have more close friends who use cigarettes (t[368] = 6.82, p < 0.001), and to date someone who uses ENDS products (t[368] = 3.39, p < 0.001), cigar products (t[368] = 3.95, p < 0.001), smokeless products (t[368] = 4.01, p < 0.001), and cigarettes (t[368] = 12.41, p < 0.001). Dual users were also more likely to believe that cigarette smoking is socially acceptable for people of their age (t[368] = 3.80, p < 0.001). Lastly, chi-square analysis indicated dual users (63.5%) were more likely than ENDS users (36.5%) to currently live with someone who smokes cigarettes (χ²(1) = 21.48, p < 0.001). CONCLUSION: Findings suggest that compared to ENDS only users, dual users have a denser peer group of tobacco users, which is char- acterized by positive social norms towards smoking. Additional research is needed to determine if the peer network and positive social norms contribute to sustaining use of ENDS, either alone or in combination with cigarettes.

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POS4-51
SCHOOL BULLYING AND SUSCEPTIBILITY TO SMOKING AMONG NEVER-SMOKING ADOLESCENTS
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INTRODUCTION: Bullying involvement has been linked with substance use; how- ever, less is known about its relationship with pre-initiation stages of adolescent cigarette smoking behavior. This study examined the association between bullying involvement and smoking susceptibility among never tried or experimented with cigarette smoking students. Susceptibility to cigarette smoking in adolescence is a strong predictor of subsequent smoking initiation. METHODS: A cross-sectional data on Canadian adolescent and youth were drawn from the 2012/2013 Youth Smoking Survey (n=28, 843) and analyses were conducted in year 2015. Logistic regression analysis was used to examine the association between bullying and smoking susceptibility among never-smoking students. RESULTS: About 21% self-reported involvement in bullying (as a bully, victim or both). Middle school students (grades 6-8) reported more involvement in bullying (24%) than those in grades 9-12 (16%). The multivariable analyses showed that the association be- tween bullying and smoking susceptibility was significantly different by grade level, with middle school students involved in bullying more at an increased likelihood of smoking susceptibility compared to uninvolved students (Bully, AOR = 2.54, 95% CI = 1.73 – 3.74; Vicnt, AOR = 1.29, 95% CI = 1.11 – 1.48; Bully-victim, AOR = 2.19, 95% CI = 1.75 – 2.74). There were no significant associations between all subgroups of bullying and smoking susceptibility for grades 9-12 students. CONCLU- SIONS: Students involved in bullying were more susceptible to smoking, al- though patterns of association varied by grade level. In particular, findings highlight that middle school students involved in bullying may have an increased risk of future smoking initiation.

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POS4-55
NEW ZEALAND SMOKERS' VIEWS OF FINANCIAL INCENTIVES TO QUIT SMOKING

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BACKGROUND: Material or financial incentives have been shown to support quit attempts, yet few studies have examined smokers' perceptions of these schemes. To address this, we examined whether financial incentives could augment other cessation interventions New Zealand (NZ) is using in its quest to become smoke-free by 2025. METHOD: Participants were current NZ smokers aged 15 and above (n=623) recruited from a commercial internet panel to complete an online survey. They were asked whether they supported financial incentives to promote quitting and their perceived effectiveness of such incentives. We also examined their views on potential Funding sources and the sum considered appropriate for someone who remained smokefree for 6 months. We used logistic regression to test associations between smoking variables and policy support. RESULTS: Paying financial incentives to smokers to quit smoking was supported by 38% of smokers; 42% did not support this strategy (19% had no opinion). There was an increased odds of support for financial incentives among heavy smokers (OR 3.96, CI 2.39 - 6.58) and moderate smokers (OR 1.68, CI 1.13 - 2.49) compared with a light smoker. Those who had made a quit attempt in the past 6 months were also more likely to support financial incentives (OR 1.47, 1.04 - 2.07). Nearly half (47%) of participants thought that financial incentives would possibly be an effective method to quit smoking, with a further 26% reporting this would be probably effective or very effective. Of those who thought financial incentive should be paid, 45% thought that the government should pay all smokers to quit and 35% thought that smokers themselves should make a contribution that the government matches. Of this group, 42% thought it would be reasonable to pay $1,000 or more, and a further 24% thought that $500 would be an appropriate sum. CONCLUSION: There was considerable support among NZ smokers for financial incentives to quit smoking, particularly among heavier smokers and those trying to quit. Financial incentives for smokers may be an acceptable policy option to encourage quitting, and further research to test the effectiveness of this idea is warranted.

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POS4-56
THE IMPACT OF HEALTH WARNING LABELS ON SMOKING PREVALENCE: FINDINGS FROM GATS AND GYTS AND IMPLICATIONS FOR FUTURE FDA REGULATORY ACTIONS

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BACKGROUND: While the Food and Drug Administration (FDA) has authorities to regulate manufacture, distribution, and marketing of tobacco products, including requiring graphic warning labels (GWLS) on cigarette packages, GWLS have not been implemented in the U.S. due to the resulting court’s decision that faulted FDA for not providing strong scientific evidence demonstrating the impact of GWLS on smoking prevalence. Objective: This study aims to assess the impact of health warning labels (HWLS) on smoking prevalence, focusing on two requirements related to warning size, font size, rotation, and inclusion of pictures and photographs, and to provide evidence of the effectiveness of HWLS for FDA's future regulatory actions related to HWLs. METHODS: WHO “MPOWER” policy measures were linked to the Global Adult Tobacco Survey (GATS) and Global Youth Tobacco Survey (GYTS) to analyze the impact of HWLS on smoking prevalence. Logistic regressions were conducted to examine the impact of smoking dimensions of HWLs related policies on smoking prevalence, controlling for other factors. FINDINGS: Our results show that HWL policies that require a large size of HWL on the principle display areas of cigarette packages is associated with a lower smoking prevalence among both adults (p=0.01) and teens (p=0.05). In addition, policies that require warnings to be on the top side of the package, include pictures and photographs, and have certain font sizes are also associated with a lower smoking prevalence. CONCLUSION: HWL related policies are associated with a lower smoking prevalence. The magnitude of the impact of these policies varies by age group, gender, and policy dimensions.

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POS4-57
THE EFFECT OF POINT-OF-SALE ADVERTISING BANS ON YOUTH SMOKING - FINDINGS FROM THE GLOBAL YOUTH TOBACCO SURVEY (GYTS)

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BACKGROUND AND OBJECTIVES: While research has demonstrated a positive association between exposure to point-of-sale (POS) tobacco advertising and youth smoking susceptibility and prevalence, there is limited evidence of the effect of POS advertising restrictions on smoking behaviors among youth. This study aims to examine whether the POS advertising ban reduces smoking prevalence and cigarette consumption among youth. METHODS: Global Youth Tobacco Surveys from 137 countries during 2007-2011 were linked to the WHO “MPOWER” tobacco control policy measures to analyze the effects of POS advertising bans (a dichotomous measure of the existence of such bans) on smoking participation, days of smoking, and cigarettes per day in the past 30 days. Weighted Logistic regressions were employed when smoking participation was taken as the outcome and ordered logit regressions were employed when smoking days and cigarettes per day were taken as the outcome. All analyses were clustered at the country level and controlled for age, parent's smoking status, countries’ per capita GDP, and country-level tobacco scores in monitoring tobacco use, protecting people from smoke, offering help to quit, warning about the dangers of tobacco, enforcing promotion/advertising bans, and raising taxes on tobacco. RESULTS: The results suggest that POS advertising bans significantly reduced smoking prevalence among youth by 3.7 percentage points (OR=0.72, p≤0.05), which corresponded to a 25% reduction in smoking prevalence. However, the association between POS advertising bans and cigarette consumption (smoking days or cigarettes per day) was found to be non-significant. CONCLUSIONS: POS advertising bans significantly reduce smoking prevalence among youth. Countries without such bans should consider adopting POS advertising bans to reduce tobacco use among their youth populations.

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POS4-59
LGBTQ TOBACCO USE PREVENTION AND CESSION INTERVENTION PREFERENCES: A QUALITATIVE ANALYSIS OF FOCUS GROUPS

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BACKGROUND: Stress, social pressure, LGBTQ bar culture, victimization, bullying and aggressive tobacco industry marketing are just a few of the reasons why LGBTQ youth and young adults start smoking. The LGBTQ community bears an undue burden from tobacco. A 2012 survey found that 38% of the LGBTQ adult
community in Toronto Ontario smokers. To address this health inequity for LGBTQ and young adults, we engaged members of the community and conducted focus groups in Toronto and Ottawa to identify preferred evidence-informed interventions that could support tobacco use prevention and cessation. METHODS: We recruited youth and young adults who identified as LGBTQ using strategies that included a Facebook ad campaign and posters at partner agencies. A total of 349 individuals completed an intake survey of which 321 were eligible based on smoking history. A total of 20 focus group sessions were held with 204 (64%) participants. The mean age of participants was 23 years; 27% identified as bisexual, 26% gay, 23% queer, 12% lesbian, 3% heterosexual and 10% other (e.g. pansexual). Approximately 56% were daily smokers, 28% were occasional smokers and 15% had recently quit (within the last 6 months). Focus group participants were presented with and responded to questions regarding three program scenarios including: group cessation counseling, four social marketing campaign ideas, and a mobile smoking cessation application. Focus group discussions were transcribed word-for-word and content was coded based on a priori categories. RESULTS: Participants provided opinions on what they liked and did not like about the program options and which of the options was most preferred. Results revealed important sub-population differences regarding programming preferences. The trans participants favoured group cessation counselling whereas lesbian, gay, bisexual and queer participants generally favoured a mobile smoking cessation application or a digital social marketing campaign. CONCLUSIONS: There is a need to tailor prevention and cessation programming to the needs of the sub-populations that comprise the LGBTQ community. Traditional approaches to cessation may not be preferred by LGBTQ youth and young adults.

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**POS4-60**


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BACKGROUND: Smoking in Hollywood films has been portrayed positively in prior decades. Yet there is limited research on how many major film characters smoke, the types of characters who smoke, or differences by country of production in more-recently introduced films. This study aims to describe film characters who use tobacco in Mexican-, Argentine-, and US-produced films. METHODS: The sample included Argentine-, Mexican-, and US-produced films (<82, 91, and 908, respectively) that were amongst the 100 top grossing films each year from 2004 to 2012 in Mexico, Argentina and the US. Prevalence of character smoking and risk behaviors of characters who smoke, assessing interactions with character deviance. Declining smoking prevalence in US films is promising; however, policy action and advocacy may be necessary to reduce portrayals in Mexican and Argentine films. Funding: This research was supported by a grant from the Fogarty International Center and the National Cancer Institute of the United States’ National Institute of Health (R01 TW009274). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

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**POS4-61**

**GRAPHIC WARNING LABELS AND THE COST SAVINGS FROM REDUCED SMOKING AMONG PREGNANT WOMEN**

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INTRODUCTION: The U.S. Food and Drug Administration (FDA) has estimated the economic impact of Graphic Warning Labels (GWL). By omitting the impact on tobacco consumption by pregnant women, the FDA analysis underestimates the economic benefits that would occur from the proposed regulations. There is a strong link between the occurrence of low birth weight babies and smoking prevalence. Low birth weight babies in turn generates much higher hospital costs than normal birth weight babies. This study aims to fill the gap by quantifying the national medical care cost savings from the reductions in prenatal smoking that will arise if GWL are implemented in the US. DATA AND METHODS: This study uses several data sources. It uses Natality Data from the National Vital Statistics System of the National Center for Health Statistics (NCHS) in 2013 to estimate the impacts of prenatal smoking on the likelihood of having a low-birth-weight baby. Controlling for socio-economic and demographic characteristics as well as medical and non-medical risk factors, we estimate the probability of a low birth weight baby when the mother smokes and when the mother does not smoke. Using these estimates we simulate the effect of GWL on smoking prevalence and the reduction of low birth weight babies for the population of mothers. Impact of GWL on prenatal smoking was estimated using the estimates from Huang et al. (2014). Using cost estimates found in the literature, we calculate the monetary savings that arises from GWL for this population. RESULTS AND CONCLUSION: Our results indicated that GWL for this population could lead to a decline of costs in excess of 100 million dollars annually. We do sensitivity analysis to determine the robustness of our estimates. GWL could provide help to protect the health of newborns and lead to a substantial cost savings for society.

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**POS4-62**

**GRAPHIC WARNING LABELS AND THE COST SAVINGS FROM SECONDDHAND SMOKE**

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INTRODUCTION: The U.S. Food and Drug Administration (FDA) estimated the economic impact of Graphic Warning Labels (GWLs). The FDA analysis, however, underestimates the economic benefits that would occur from the proposed regulations by omitting the reductions in nonsmokers’ exposure to tobacco smoke. Secondhand smoke exposure among nonsmokers has been linked to several adverse health outcomes. This study aims to quantify the national medical expenditures and lost productivity savings from the reductions in nonsmokers’ SHS exposure. GWL could provide help to protect the health of newborns and lead to a substantial cost savings for society.

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billion (2013 dollars). This study uses the impacts of GWLs on reduced smoking prevalence ranges between 12.1% and 19.6% estimated in Huang et al. (2013). Our results indicate that a 12.1% drop in smoking prevalence would generate $460 million dollars savings annually, and a 19.6% drop would lead to $750 million dollar savings annually. This study does sensitivity analysis to determine the robustness of our estimates. CONCLUSION: GWLs could protect the health of nonsmokers and lead to a substantial cost savings for society.

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POS4-63

USE OF PRICE-RELATED PROMOTIONS AMONG U.S. ADULTS WHO CURRENTLY USE ELECTRONIC NICOTINE DELIVERY SYSTEMS

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Prices can directly affect tobacco product use, and the tobacco industry employs a variety of strategies to decrease the price of tobacco products and make them more appealing to price-sensitive consumers, including pricing promotions and discounts. The prevalence of electronic nicotine delivery systems (ENDS) use has increased in the U.S. in recent years. However, to our knowledge, no studies have evaluated the use of price discounts for ENDS purchases. We assessed the use of price-related discounts for ENDS using data from the 2015 Summer Styles survey, a consumer-based web survey of U.S. adults aged ≥18 years (n=4,127). Current ENDS users (n=105), defined as respondents who used ENDS (e-cigarettes, e-hookahs, hookah pens, or vape pens; or some other electronic vapor product such as e-cig or e-cig-e) at least once during the past 30 days, were asked, “In the past 30 days, did you use coupons, rebates, discount codes, or any other special price-related promotions when you bought electronic vapor products, such as electronic cigarettes (e-cigarette), electronic hookah (e-hookah), or vape pens?” Descriptive statistics were calculated by current cigarette use status, frequency of ENDS use, sex, age, education, income, race/ethnicity, marital status, employment status, and urban/rural status. Logistic regression was also used to determine adjusted odds ratios (aOR) for use of price-related promotions. The findings reveal that 12.3% of current ENDS users used price-related promotions to purchase ENDS within the past 30 days. After adjustment, the odds of using ENDS price-related promotions was significantly higher among dual-users of conventional cigarettes and ENDS (aOR: 1.01) and among daily ENDS users (aOR: 3.35); odds were significantly lower among those employed at the time of the interview (aOR: 0.33). These findings indicate that 1 in 8 current ENDS users use price-related promotions, and use of these promotions is greater among daily ENDS users than cigarettes, but research is needed to examine the extent to which price-related promotions are contributing to rising prevalence of ENDS use.

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POS4-64

EXAMINING SMOKERS DEMAND FOR E-CIGARETTES: EVIDENCE FROM EXPERIMENTAL AUCTIONS

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The constantly evolving tobacco market presents opportunities and challenges for public health. New products, like e-cigarettes, may present less health hazards than cigarettes, but research is needed to examine the extent to which broader adoption of these products could impact the health of millions of Americans, along with smokers’ demand for e-cigarettes. In this paper, we use experimental auctions to examine smokers’ demand for e-cigarettes, along with the influence of television and print advertising on willingness to pay for e-cigarettes and cigarettes in an experimental auction. Experimental auctions have become more popular in assessing issues in public health, and have been used by economists for over two decades to assess demand for food products. These were actual auctions, with winners and losers, where winners purchased products. We conducted experimental auctions with 409 smokers from Buffalo, NY and Selinsgrove, PA between March-November 2014. Our results give insight into factors that affect smokers’ demand for e-cigarettes. At the time of the auctions, subjects were smokers but not e-cigarette users. Smokers bid on a single use version of Blu e-cigarettes, a Blu e-cigarette starter kit, and a pack of cigarettes. There were four treatment groups. One group received a print ad about Blu e-cigarettes, while another group saw a TV ad about Blu e-cigarettes. A third group saw both the print and TV ads, while the fourth group was a control group and saw neither ad. We find that smokers were willing to pay for e-cigarettes, with mean bids of $3.80 for cigarettes, $4.22 for the single-use e-cigarette, and $10.81 for the starter kit. We also find that, relative to seeing only a video ad, smokers who saw a print ad or both a print and video ad were willing to pay more for e-cigarettes (p-value=0.032). These findings confirm that smokers are interested in using e-cigarettes, are willing to pay more for e-cigarettes than cigarettes, and that advertising influences demand.

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POS4-65

INVESTIGATING DIMENSIONALITY AND MEASUREMENT BIAS OF DSM-5 TOBACCO USE DISORDER CRITERIA IN A REPRESENTATIVE SAMPLE OF THE LARGEST METROPOLITAN AREA IN SOUTH AMERICA

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BACKGROUND: The main instruments to assess tobacco dependence are the Fagerstrom Test for Nicotine Dependence and the Nicotine Dependence Symptom Scale. Although these instruments cover a wide spectrum of smoking behaviors, there is a need to explore new symptoms/criteria or diagnostic structures. Given the recent launch of a new diagnostic classification (DSM-5) from the American Psychiatric Association for tobacco use disorder (TUD), we aimed to investigate its dimensionality and possible measurement bias in a non-U.S. sample. METHODS: The current analyses were restricted to the lifetime weekly smokers (n=1,388). Data came from São Paulo Megacity Project (which is part of World Mental Health Surveys). First, item response theory (IRT) was used to investigate the severity and discrimination properties of 9 criteria of DSM-5-TUD: Craving, Tolerance, Psychological Withdrawal, Physical Withdrawal, Larger/Longer, Quit/Control, Time Spent, Given Up, and Continued Use. Finally, differential criteria functioning (DCF) were investigated by sociodemographics (income, gender, age, employment status, marital status and education), medical diseases (cardiovascular, neurological, cancer, diabetes, digestive, respiratory, arthritis, muscle and headache), and psychiatric disorders (major depressive, anxiety, alcohol and drug dependence, impulsive, and insomnia). All analyses were performed in Mplus software taking into account complex survey design features. RESULTS: IRT results showed that the criteria “Given Up” had the highest severity property. The criterion “Larger/Longer” had the lowest value of severity, but the highest value of discrimination. Physical withdrawal had the lowest discrimination property. More importantly, no correlate (sociodemographic, psychiatric or medical) had DCF both in criterion- and factor-level, which would rend measurement bias. CONCLUSION: This study reinforces the existence of a DSM-5 TUD continuum, merging Craving from ICD-10 with the other 8 criteria from DSM-IV (dependence) in the largest metropolitan area of South America, including subgroups that had previously higher rates of tobacco use (lower educational/income levels).

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POS4-66
PSYCHOMETRIC ANALYSIS OF FAGERSTRÖM TEST FOR NICOTINE DEPENDENCE IN NEPALESE POPULATION

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BACKGROUND: The Fagerström Test for Nicotine Dependence (FTND) is extensively used six-item questions for measuring physical dependence on nicotine. This study examined psychometric properties of FTND scale in Nepalese current smoking population. METHODS: We conducted a cross-sectional study using purposive sampling from two urban and two rural community of Nepal. Data were collected using both Nepali and English version FTND questionnaire through paper and pencil based interview by medical and public health graduates from August to November 2014. Total 587 smokers above 15 years were included in the study. RESULTS: Out of 587, 84.8% were male and the median age of respondents was 32.7(95% CI: 31.6-33.9). Two-thirds of the respondents was from the non-indigenous ethnicity. Nearly 70% of respondents were from the urban area. The mean age of smoking initiation was 17.0 (95% CI: 16.7-17.7). Further, the mean number of cigarettes smoked per day was 10.5 (95% CI: 9.5-11.4) and the mean years of smoking was 13.5 (95% CI: 11.9-14.9). Among them, 52% tried to quit smoking of 14% were female. The mean FTND score was 3.73 (95% CI: 3.6-3.9) and 20% of smokers had high nicotine dependence (n=6). Next, both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) suggested the FTND comprised two components. Component 1 was defined by the questions “time to first cigarette after waking”, “amount smoked per day”, “smoking while ill” and “which cigarette is hard to give up” describes the urgency of restore to nicotine levels whereas component 2 is defined by “difficulty refraining from smoking forbidden places” and “smoke more during the first hours after waking” as maintenance of nicotine level to a given during waking hours. CONCLUSION: The psychometric properties of FTND confirm two components structure in Nepalese population. However, the further extensive studies are needed to ensure FTND is recommended for wider use for Nepalese population.

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POS4-67
USE OF HIGH/NICOTINE TAR (FULL FLAVOR) CIGARETTES AND RISK FOR NICOTINE DEPENDENCE IN NATIONALY REPRESENTATIVE SAMPLES OF U.S. SMOKERS

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INTRODUCTION: The present study examined whether use of machine-estimated high nicotine/tar yielding cigarettes predicts greater risk of nicotine dependence after controlling for the influence of potential confounding factors in U.S. nationally representative samples. METHOD: Data were obtained from multiple years of the National Survey on Drug Use and Health (NSDUH). Nicotine dependence was measured by (a) the Nicotine Dependence Syndrome Scale and (b) latency to first cigarette after waking. Associations between use of high nicotine/tar yield cigarettes and risk for nicotine dependence were examined using multiple logistic regression. RESULTS: The odds of nicotine dependence were reliably greater among users of high compared to lower nicotine/tar yield cigarettes even after adjusting for socio-demographic and other smoking characteristics (p < .0001). This relationship was (a) generally graded across differing nicotine/tar yield cigarettes, (b) discernible across two definitions of nicotine dependence and multiple NSDUH survey years, and (c) observed among adult and adolescent smokers. CONCLUSION: Use of high nicotine/tar yield cigarettes is associated with increased odds of nicotine dependence, a relationship that has important tobacco regulatory implications. Whether the marketing of high nicotine/tar yield cigarettes is increasing risk of nicotine dependence among U.S. smokers warrants further research.

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POS4-68
DEVELOPMENTAL PATTERNS AND TRANSITIONS OF CIGARETTE SMOKING IN A NATIONALLY REPRESENTATIVE SAMPLE OF YOUNG ADULTS

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Current evidence suggests cigarette smoking initiation is increasing among young adults, despite a recent decrease in rates of initiation among adolescents. This study examines developmental patterns and transitions in cigarette smoking over time in a nationally representative sample of young adults, aged 18-34. Seven waves of data from the Truth Initiative Young Adult Cohort Study were used to model cigarette smoking intensity over time (n=9,791). Latent class analyses were employed without specifying a functional form on development; smoking probabilities were allowed to vary freely at each age. Analyses used a 3-category smoking status outcome variable (never/non-current, non-daily [1-24 of past 30 days], and daily [25-30 or past 30 days]). Covariates included gender, race/ethnicity, education level, household income and parental smoking. The 3-class solution provided the most stable patterns and best classification: class 1 – daily (heavy) smokers who initiate and sustain this level of smoking at an early age (11.3%); class 2 – non-daily (moderate) smokers (9.4%); class 3 – never/non-current smokers (79.3%). Developmental patterns were plotted as the estimated probability for each response category by class at each age. Moderate smokers rapidly diverge from non-smokers by their early 20s, after which they have a relatively high probability of smoking. Moderate and heavy smokers diverge around age 20 and their usage patterns stabilize in their mid-twenties. Characteristics associated with a higher probability of smoking (moderate or heavy) included being male (<p<.005), having a parent who smoked (<p<.001), and having less than a college education (<p<.01). Non-white respondents had a lower probability of heavy smoking compared to white respondents (<p<.005). However, race/ethnicity did not predict moderate smoking versus non-smoking. Lower income groups had a higher probability of heavy smoking relative to respondents who reported household incomes of $75,000 or higher (<p<.005). Recognizing developmental patterns of smoking in young adults will inform interventions to reduce smoking initiation and prevent escalation of tobacco use in this age group.

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POS4-69
TOBACCO RELATED CONVERSATIONS ON TWITTER AND SMOKING

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INTRODUCTION: Community norms have been shown to be related with individuals’ smoking behavior. Social media data provide rich information about community norms related to health topics and have been shown to improve epidemiological models of health events, such as the community-level mortality from heart failure. Given the abundant social media messages related to tobacco marketing, use, and intentions to use or quit, we expect that such information similarly reflects community norms around tobacco use, which can inform community-level models of tobacco use that draw upon traditional surveillance. This paper reports the results of analyses that combine community-level smoking prevalence and tobacco use risk factors collected from standard surveillance methods, with geocoded tobacco related tweets to improve modeling of smoking prevalence. METHOD: We used linear regressions to model the relationship of community-level smoking prevalence and tobacco related tweet rates controlling for traditional risk factors. Community-level smoking prevalence in 2012 was measured with BRFSS data across metropolitan statistical areas (MSAs). The UIC Health Media Collaboratory collected 82,680,000 tobacco related tweets in 2012-2013 via Firehose.
The use of e-cigarettes has increased rapidly in the last few years. The most common pattern of e-cigarette use is dual use with conventional cigarettes. Using a nationally representative sample of US smokers at baseline (N=2028), the present study examined the duration of e-cigarette use and its relationship with quitting smoking at two-year follow-up (2012-2014). Long-term e-cigarette users were defined as those who reported using e-cigarettes in the last 30 days at both baseline and follow-up. Short-term users were those who used e-cigarettes at baseline only or at follow-up only. Nonusers were those who did not use e-cigarettes at baseline or follow-up. The results show that 43.7% of dual users at baseline were still using e-cigarettes at two-year follow-up. However, these long-term e-cigarette users were significantly more likely to have made an attempt to quit smoking than the short-term users or nonusers (72.6% vs. 53.8% and 45.5%, respectively), and more likely to have quit for at least 3 months (42.4% vs. 14.2% and 15.6%, respectively). The differences were statistically significant after adjusting for demographics and CPD at baseline. Interestingly, the long-term dual users were also less likely to use FDA approved medication in the last quit attempt, although the differences were not statistically significant (19.5%, 31.5% and 26.7% among long-term, short-term and nonusers, respectively). These results suggest that the long-term use of e-cigarettes (which starts with dual use with conventional cigarettes) could contribute to more successful quitting on the population level in the long run. The results also raise the urgency in regulating e-cigarettes, to minimize the health risk of long-term e-cigarette use.

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POS4-70
LONG-TERM AND SHORT-TERM USE OF E-CIGARETTES AMONG SMOKERS: IMPLICATIONS FOR SMOKING CESSATION
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RESULTS: Among 1,676 respondents, 65% were female, 32% were Hispanic, 29% identified as White, 26% Asian, 14% Caribbean/ West Indian and 12% Black. 54% of students had ever tried a tobacco product; for lifetime use, 43% had used hookah, 35% had used cigarettes and 21% had used ENDS. Nearly half of Hispanic students, 54% of White students, 48 % of Caribbean students, 24% of Black students and 31% of Asian students reported ever use of hookah. About 20% of Hispanic, Asian and Caribbean students and 29% of White students had tried ENDS. While only 2% of the overall sample identified as Arab or Middle Eastern, 62% had used hookah and 36% had used ENDS. Use in the last 30 days (among those who had ever used that tobacco product) was as follows: cigarettes, 28% (155/554); hookah, 20% (138/690); ENDS, 23% (78/343). The majority of students reported non-daily use (63% of cigarette users, all but one of the hookah users and 75% of ENDS users). Among the current hookah users, 68% also smoked cigarettes and 24% also used ENDS. Among daily ENDS users, 8% were daily cigarette smokers, 31% were non-daily smokers and 13% use hookah. Among non-daily ENDS users, 29% were daily cigarette smokers, 50% were non-daily smokers, and 42% use hookah. CONCLUSION: Lifetime use of tobacco products was common and varied by race/ethnicity. The majority of students who use tobacco products report non-daily use, however there is a high prevalence of dual use.

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POS4-72
CO-OCCURRENCE OF TOBACCO USE, PHYSICAL INACTIVITY, AND BINGE DRINKING: IMPACT ON SELF-REPORTED CHRONIC DISEASE AMONG U.S. ADULTS, 2013
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INTRODUCTION: Public health efforts typically adopt a silo approach towards prevention and control of chronic diseases, targeting individual etiologic factors separately. This silo approach is also often reflected in risk behavior surveillance; for example, several studies exist showing that lifestyle risk factors such as tobacco use, physical inactivity and binge drinking are separately associated with poor health outcomes. Less research has however focused on clustering of lifestyle risk factors. We assessed the relationship between the co-occurrence of tobacco use, physical inactivity and binge drinking, and self-reported coronary heart disease (CHD), stroke, chronic obstructive pulmonary disease (COPD) and diabetes among US adults. METHODS: Data were from the 2013 Behavioural Risk Factor Surveillance System (n=483,865). Lifestyle risk factors assessed were tobacco use (daily or someday use of cigarettes or smokeless tobacco), physical inactivity (<150 minutes of aerobic exercise/week), and binge drinking (≥5 drinks on ≥1 occasion within the past 30 days). Multivariate logistic regression was used to measure the relationship between the presence of lifestyle risk factors (categorized as 0, 1, or ≥2) and CHD, stroke, COPD and diabetes. RESULTS: Overall prevalence of assessed lifestyle risk factors was: tobacco use~20.5%, physical inactivity~39.1%, binge drinking~28.1%, ≥1 lifestyle risk factor~55.0%. Compared to respondents with no risk factors, those with 1 and ≥2 risk factors respectively had higher odds for: CHD (AOR=1.20 and 1.31); stroke (AOR=1.24 and 1.58), COPD (AOR=1.74 and 3.22), and diabetes (AOR=1.39 and 1.12) (all p<0.05). CONCLUSION: Individuals with multiple lifestyle risk factors had increased odds of reporting adverse health outcomes. Health promotion at the individual and public health levels should be holistic in scope and focus on multiple determinants of disease rather than adopt a silo approach. Enhanced efforts at the population level are needed to identify and implement preventive strategies, such as educational campaigns, among subpopulations at high risk for multiple risk factors.

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POS4-71
ALTERNATIVE TOBACCO PRODUCT USE AMONG A DIVERSE SAMPLE OF YOUNG ADULTS
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BACKGROUND: Use of alternative tobacco and nicotine products such as hookah and electronic nicotine delivery systems (ENDS) is increasing, particularly among youth. As ethnic and racial minorities are under-represented in national surveys of tobacco use, we had a unique opportunity to assess patterns of tobacco use among young adults in the most diverse and largest public university system in the US. METHODS: We conducted an online and telephone survey among a statistically representative sample of students aged 18-30 at 24 colleges and schools within the City University of New York. The survey assessed lifetime and past-30 day tobacco product and ENDS use, demographics, and other health characteristics.
Electronic nicotine delivery systems (ENDS) use has increased significantly in the last several years. Concurrently, electronic cigarettes (e-cigarettes) have received an increasing amount of attention from the scientific community. However, electronic hookahs (e-hookahs) are another ENDS product that have been largely ignored in the scientific literature. The current study provides data on prevalence estimates and harm perceptions of e-hookah use, as well as contrasts e-hookah and e-cigarette use in the sample of 399 young adults (67.8% female). More than half (58.9%) of the entire sample had ever tried an e-hookah. Ever use of e-hookah by conventional cigarette smoking status was 90.0% for current smokers, 75.0% for former smokers, and 56.6% for never smokers. In contrast, for e-cigarettes, ever use was just over a third of the entire sample (35.2%) with 90.0% of current cigarette smokers, 69.2% of former cigarette smokers, and 29.3% of never smokers having tried an e-cigarette. E-hookah 30-day use was 20.1% of the total sample. Current smokers had the highest 30-day prevalence rate (50.0%), followed by former smokers (41.7%), and never smokers (16.8%). Only 10.1% of the whole sample had used an e-cigarette in the past 30 days. Former smokers were most likely to have used an e-cigarette in the past 30 days (53.8%), followed by current smokers (36.7%), and never smokers (6.3%). Overall, these findings suggest that e-hookah ever use and 30-day use were much more prevalent than e-cigarette use in the entire sample. Never smokers also had considerably higher e-hookah lifetime use and past 30-day use compared to e-cigarettes. Participants rated harm perceptions of e-hookahs and e-cigarettes similarly. In separate hierarchical logistic regression analyses, age and conventional cigarette smoking status were significant predictors of e-hookah ever use (OR = 1.20, 95% CI [1.05, 1.38]). OR = 6.08, 95% CI [2.32, 15.90], respectively) and e-hookah past 30 day use (OR = 1.29, 95% CI [1.03, 1.62]; OR = 5.06, 95% CI [2.53, 10.15], respectively). Overall, all results indicate e-hookah use is endorsed more frequently than e-cigarettes, warranting further empirical investigations.

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POS4-75
SUSCEPTIBILITY TO TOBACCO PRODUCT USE AMONG YOUTH IN WAVE 1 OF THE POPULATION ASSESSMENT OF TOBACCO HEALTH (PATH) STUDY

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BACKGROUND: Although fewer youth are smoking cigarettes, use of non-cigarette tobacco products is increasing. Understanding sociodemographic disparities in adolescent susceptibility to these tobacco products is critical to ensuring the success of ongoing tobacco control efforts among youth. METHODS: We examined susceptibility, experimentation and current use of multiple tobacco products among African American (AA), Hispanic/Latino (HL), and non-Hispanic White (NHW) adolescents in the US, using Wave 1 data from the Population Assessment of Tobacco and Health (PATH) Study. Address-based, area-probability sampling was used to select participants. Respondents included 12- to 17-year-olds (n = 13,651), their parents (n = 13,589), and 18- to 24-year-olds (n = 9,119) who completed Audio-Computer-Assisted-Self-Interviews in either English or Spanish. RESULTS: Whereas few youths had heard of dissolvable products, 62% had heard of hookah, and 89% of e-cigarettes. The proportion susceptible to use was equivalent for cigarettes and e-cigarettes (both 27%) followed by hookah (22%), pipes (18%), cigars (15%), and smokeless tobacco (10%). Both AA (OR = 1.35; 95% CI: 1.18-1.56) and HL (OR = 1.34; 95% CI: 1.20-1.50) were more likely than NHWs to be susceptible to use a tobacco product. In contrast, smaller proportions of AAs compared to NHWs had ever used (experimentation + current use) cigarettes (9.8±1.5% vs 15.1±1.3%), e-cigarettes (7.8±1.5% vs 13.0±0.9%), hookah (8.0±1.8% vs 12.5±1.2%) and smokeless products (2.3±1.0 vs 8.1±1.0%); HLs also had smaller proportions compared to non-Hispanic Whites (cigarettes: 12.4±1.1%, smokeless tobacco: 3.8±1.0%). E-cigarette users were particularly susceptible to use other products: 73% were susceptible to cigarettes, 71% to hookah, and 56% to cigars. Susceptibility increased with age: one-third of 17-year-olds were susceptible to using a tobacco product compared to two-thirds of 17-year-olds.

CONCLUSIONS: Adolescents who have used e-cigarettes are more likely to be susceptible to use other tobacco products. Susceptibility to tobacco products is higher among AAs and HLs, which may portend future increases in prevalence.

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POS4-76
AWARENESS OF ELECTRONIC CIGARETTES AMONG THE GENERAL POPULATION AND MEDICAL EXPERTS

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The purpose of this study was to investigate the awareness of the general population and medical experts, who have participated in smoking cessation clinics, regarding electronic cigarettes (e-cigarettes). To achieve this research purpose, we developed two separate questionnaires for each target group and recruited 756 adults and 33 medical experts. The surveys were conducted through an internet survey. The current e-cigarette users among the general population believed that their reason of using e-cigarettes was to reduce daily smoking, however, we found that there was a possibility of being exposed to more nicotine because they...
were dual users who used both e-cigarettes and conventional cigarettes. Most e-cigarette users considered e-cigarettes as a smoking cessation aid, while almost all medical doctors believe that e-cigarettes were not a part of nicotine replacement therapy. There was a different awareness between the two groups about the health impacts of e-cigarettes. Almost all medical doctors answered that e-cigarettes were harmful, however, around half of e-cigarette users among the general population responded that it was harmless. We believe that this gap was a result of insufficient information transfer, thus, it is recommended that scientific evidence regarding e-cigarettes should be transferred rapidly and effectively to the public.

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POS4-77
E-CIGARETTE USE AND RISK PERCEPTION AMONG SOUTH AFRICAN ADULT POPULATION
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OBJECTIVE: Only limited information is available on E-cigarette use in low- and middle-income countries (LMICs). This study therefore sought to determine risk perception and prevalence of use of E-cigarettes among South African adults during 2010-2011. METHODS: This study involved a nationally representative sample of South African adults ≥16 years who participated in the 2010 (n=3048) and 2011 (n=2,971) annual South African Social Attitude Survey (SASAS). Information obtained from both survey waves included socio-demographic data, past and current use of tobacco products and number of cigarettes smoked per day. While the two survey waves included a tobacco module, only the 2010 survey featured questions related to risk perception of E-cigarettes (EC) as compared to regular cigarettes. Study participants in the 2010 survey compared risk of use of different tobacco products with smoking regular cigarettes. Taking account of the complex sample employed in SASAS, data analyses included descriptive statistics of weighted estimates, chi-square statistics, t-tests and ANOVA. RESULTS: Of all the respondents (n=6,019), 0.4% (95%CI= 0.2 - 0.6) reported current 'someday' or 'daily' use of EC, while 1.9% (95% CI = 1.1 - 3.3) of current smokers reported current EC use. During 2010, only 17.9% (n=529) accurately perceived EC to be less harmful than regular cigarettes and 29% (n=877) reportedly did not know. Current EC users were more likely to report relatively lower perceived risk than never users (66.7% vs. 17.5%; p=0.001). However, all current EC users were also concurrently smoking regular cigarettes and the number of cigarettes smoked per day by current EC users was not different from that smoked by non-current EC users (10.4 vs. 9.3; p=0.541). CONCLUSIONS: E-cigarette use was uncommon in South Africa during 2010/2011. Although EC use is associated with accurate perception of its relative risk, dual use with regular cigarettes was very common with EC users smoking no fewer regular cigarettes than none EC users.

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POS4-79
A CONTENT ANALYSIS OF ELECTRONIC HEALTH RECORD (EHR) FUNCTIONALITY TO SUPPORT TOBACCO TREATMENT
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BACKGROUND: The adoption of Electronic Health Records (EHRs) in healthcare settings is an opportunity for promoting smoking cessation. EHR functionality related to smoking cessation has potential to shape clinician behavior and standardize best practices. Previous studies have not systematically examined the characteristics of EHRs related to smoking cessation. OBJECTIVES: The purpose of this study is to review the published literature that describes EHR modifications aimed at supporting cessation and to document the prevalence of EHR functionality using a 5 A’s framework (Ask, Advise, Assess, Assist, Arrange). METHODS: A literature review was conducted and 18 published studies covering 14 unique EHRs were identified. A content analysis for EHR functionality related to tobacco treatment was conducted by two independent coders. RESULTS: For functionality related to Ask, 100% of EHRs allowed for the documentation of smoking status, in some cases, prompted by an alert (42.8%). Others allowed for the documentation of cigarettes smoked per day (28.6%), tobacco type (35.7%), and previous quit attempts (21.4%). For Advise, 35.7% of EHRs provided functionality helping a clinician provide advice to quit. For Assess, more than half of EHRs included a feature to document a patient’s willingness to quit. For Assist, EHRs provided several features, sometimes grouped together in an order set and/or with the presence of an alert. The vast majority provided medication prescribing functionality (78.6%). About half included a feature to refer a patient to the quitline (50.0%), to a tobacco treatment specialist (42.8%), or to educational materials (57.1%). Finally, for Arrange, EHRs helped by scheduling follow-up visits (35.7%) or by linking specialists back to primary care providers (28.6%). CONCLUSIONS: Studies that have attempted to modify EHRs for tobacco treatment purposes have included modifications across the steps in the 5 A’s model, with most supporting documentation of smoking status (Ask) and assisting with medication prescribing (Assist). Future studies need to examine the relationship between the presence of specific EHR functionality and smoking cessation outcomes.

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POS4-80
THE ASSOCIATION OF WATERPIPE SMOKING WITH CORONARY ARTERY CALCIUM SCORE IN A COMMUNITY BASED SAMPLE

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RATIONALE: The evidence linking waterpipe smoking to cardiovascular disease is limited. The waterpipe smoking epidemic is recent and the cardiovascular effects of smoking are often latent. It is therefore advantageous to examine the association between waterpipe smoking and measures of sub-clinical cardiovascular disease. Coronary artery calcium score (CAC) is a validated predictor of cardiovascular events (myocardial infarction and death) independent of other risk factors. OBJECTIVE: To evaluate the association of waterpipe smoking with CAC an established marker of coronary artery disease (CAD) risk in a community-based sample.

METHODS: Cross-sectional community-based study including 220 exclusive daily waterpipe smokers and 220 never-smokers age 40 years or older recruited from the community in Beirut and Doha. Smoking was assessed using a validated questionnaire and urine cotinine levels. CAC was assessed using cardiac gated chest CT. The study is funded by Qatar National Research Foundation. RESULTS: To date CAC was assessed in 77 waterpipe smokers and 50 never-smokers who are included in this analysis. The average age and BMI in smokers and non-smokers were 41.1±9.1 years and 30.7±29.4 Kg/m² respectively. 40.3% of waterpipe smokers were females vs. 42% of non-smokers. Smokers reported smoking on average 2.3 waterpipes per day over an average duration of 27.7 years for an average of 60.8 waterpipe years. The average CAC was 182.8 Agatston unit (SD 610.9) in waterpipe smokers and 56.2 Agatston unit (SD 199.8) in non-smokers; however, the difference between smokers and non-smokers did not reach statistical significance. The average individual artery CAC were also higher in waterpipe smokers compared to non-smokers although the difference did not reach statistical significance. Using absolute CAC thresholds to categorize CAD risk, 27% of waterpipe smokers had CAC in the intermediate to high-risk category (>100 Agatston units) versus 12.0% of non-smokers (p=0.04). CONCLUSION: In a community-based study, waterpipe smokers had a higher CAD risk as defined by percent predicted or absolute CAC compared to non-smoker. The absolute CAC were also higher in waterpipe smokers compared to non-smokers but the difference did not reach statistical significance. A larger study is warranted to better assess this association and adjust for potential confounders.

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POS4-81
BELIEVABILITY OF CIGAR WARNINGS: IMPACT OF SOURCE AND MESSAGE

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INTRODUCTION: More than 7% of US adults smoke cigars and many are ill informed about their health risks. In 2001, the Federal Trade Commission enacted nationwide rules for the packaging of certain types of cigars, requiring that they display one of 5 warnings on a rotating basis, each attributed to the Surgeon General. Little research has examined effectiveness of these warnings. This research examines how the source and the type of warning message affect the believability of cigar warning messages, a critical factor in determining overall effectiveness. METHODS: Between August 2014 and June 2015 a nationally representative survey of adults was conducted (N=5014). Using an experimental design, each adult was randomly assigned to one of 12 cigar warning conditions, with the source and message type varied. Sources included: Warning (no source), Surgeon General Classic Blend Swedish snus, Copenhagen moist snuff, Hawken Rough moist snuff wintergreen, Red Man moist snuff wintergreen, or Nicorette lozenges (control product) on each of five separate laboratory visits. Differences between products in self-reported liking, change in craving, and change in withdrawal were measured. Repeated measures mixed model analysis revealed significant differences between products in overall reinforcement (p<0.0001), and in the aversion (p<0.0001), reduced craving (p<0.0001), enjoyment sensations (p<0.0001), psychological reward (p<0.0001), and satisfaction (p<0.0001) factors of the Cigarette Evaluation Scale modified for Smokeless Tobacco. Significant differences were also found between products in ratings of liking (p<0.0001), satisfaction (p<0.0001), nicotine content (p<0.0001), and strength of the tobacco (p<0.0001) as measured by the Duke Sensory Questionnaire modified for Smokeless Tobacco. Reduction in overall craving as measured by the Questionnaire for Smoking Urges (p<0.0001) and Schult Sitzer Scale of Tobacco Use Urges (p<0.0001), as well as reduction in overall withdrawal as measured by the Minnesota Nicotine Withdrawal Scale (p<0.0001) (all modified to measure ST use), also revealed significant differences across products. Red Man and Copenhagen snuff, which consistently produced the highest ratings of liking and reduction in craving across measures, also contained the greatest amount of total nicotine. While Trial 1 revealed diversity across different ST types, Trial 2 exposed diversity in abuse liability and likelihood of adoption across similar ST types.

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**POS4-83**

**THE ASSOCIATION OF WATERPIPE SMOKING WITH QUANTITATIVE CT MEASURED EMPHYSEMA IN A COMMUNITY BASED SAMPLE**

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RATIONALE: Waterpipe smoking has gained popularity and has become an emerging global trend. A perception of reduced harm is a potential factor contributing to this increase in popularity. Emerging evidence is linking waterpipe smoking to respiratory disease; however, the quality of the evidence was deemed low. Quantitative CT measured emphysema is a marker of respiratory disease that was associated with the extent of emphysema on autopsy, lung function decline and COPD symptoms and prognosis. OBJECTIVE: To evaluate the association of waterpipe smoking with % emphysema and volume determined by quantitative chest CT.

METHODS: Cross-sectional study including 220 exclusive daily waterpipe smokers and 220 never-smokers aged 40 years or older recruited from the community in Beirut and Doha. Smoking was assessed using a validated questionnaires and plasma cotinine levels. Lung and emphysema volumes were determined using quantitative chest CT images reconstructed using the Philips 265 ict extended brilliance workspace software. Emphysema was defined as voxels with density < -950 HU. % Emphysema was calculated by dividing emphysema volume by total lung volume. The study is funded by Qatar National Research Foundation.

RESULTS: To date quantitative CT measures were obtained on 52 waterpipe smokers and 30 never-smokers who are included in this analysis. The average age of waterpipe smokers and non-smokers was 55.6 and 53.9 years respectively. 48.1% of waterpipe smokers were female vs 60.0% of non-smokers. Smokers reported smoking on average 1.4 waterpipe per day over 18.2 years for an average of 40.3 waterpipe-years. The mean total lung volume in waterpipe smokers and non-smokers were respectively 3870 mL (SD 1712) and 3374 mL (SD 1111), while the tracheal volumes were respectively 44.9 mL (SD 17.4) and 40.0 mL (SD 15.1). The mean emphysema volume in smokers and non-smokers were respectively 69.0 mL (SD 89.5) and 41.5 mL (SD 55.3) while the % emphysema were respectively 1.4% (SD 1.4) and 1.0% (SD 1.1). The differences in the emphysema volume and % emphysema between smokers and non-smokers did not reach statistical significance (p = 0.09 and p = 0.1 respectively).

CONCLUSION: In a community-based sample, compared to non-smokers, waterpipe smokers had larger % emphysema and volume, markers of anatomic emphysema and correlates of lung function decline and COPD symptoms and prognosis. However, the difference in % emphysema and volume between waterpipe smokers and non-smokers did not reach statistical significance. A larger well-powered study is warranted to better evaluate this association and potential confounders.

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**POS4-84**

**ADAPTING THE HEAVINESS OF SMOKING INDEX FOR USE WITH PREGNANT CIGARETTE SMOKERS**

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INTRODUCTION: Developing sensitive measures of nicotine dependence is critical to effective tobacco control and regulatory efforts. The two best single-item indices of dependence in the general population of smokers are Cigarettes per Day (CPD) and Time to First Cigarette (TTFC), hence the development of the Heaviness of Smoking Index (HSI) comprising both items. The HSI has also been used with pregnant smokers. However, it is unclear whether the method of scoring the HSI is appropriate for this population, as most pregnant smokers who fail to quit typically reduce their smoking rate by almost 10 CPD. How they alter their CPD is not known. As a first step towards adapting the HSI for use with pregnant smokers, we investigated how changes in CPD from pre-pregnancy to pregnancy alters scoring. METHODS: Participants (N = 289) were from smoking-cessation trials with women still smoking at start of prenatal care. All participants completed study intake assessments at which they reported CPD pre-pregnancy and over the previous week. Pre-pregnancy and study intake CPDs were compared using the sign test. RESULTS: The HSI CPD scoring method produced significantly different scores pre-pregnancy vs. at intake (p < .0001). At pre-pregnancy, the proportion of women scoring a 0, 1, 2, and 3 were 21.5%, 56.3%, 17.6%, and 7.3%, respectively. At intake, these values were 71.6%, 24.9%, 2.1%, and 1.4%. In total, 179 (62%) women fell into a lower CPD category at intake vs. pre-pregnancy, 103 (36%) remained in the same category, and 7 (2%) fell into a higher category. DISCUSSION: The HSI method of scoring CPD does not appear to be an appropriate match with pregnant smokers. Allocating a score of 0 to almost three-quarters of pregnant women who are continuing to smoke is especially concerning. Developing a method of HSI scoring that accommodates the substantial changes in smoking that occur upon learning of pregnancy appears to be a necessary step if the HSI is to be a useful measure in research with pregnant women.

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**POS4-85**

**FREE RADICAL AND ALDEHYDE EXPOSURE FROM LITTLE CIGARS**

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Tobacco smoke is a major source of oxidative stress containing over 10^16 free radicals (FR) per puff as well as high concentrations of aldehydes. Considerable evidence implicates that oxidative stress plays a fundamental role in the development of many diseases. However, there are no reports on the levels of free radicals and aldehydes in little cigars. In this study we quantitated the levels of free radicals observed in conventional cigarettes. Little cigars and cigarettes were purchased at local retail stores and preconditioned before testing. Mainstream smoke was generated using a smoking machine under the FTC protocol. Smoke was passed through impingers, containing either tert-benzene with PBN to spin trap free radicals or acetonitrile with DNPH to derivatize aldehydes, including acetaldehyde (AC), crotonaldehyde, butanal, formaldehyde, and propanal. Free radical spin adducts were quantitated by EPR and aldehydes by HPLC. Results indicate that the levels of aldehydes and free radicals observed in mainstream smoke from little cigars varied substantially on both a per puff basis (22 – 91 ug AC/puff and 6 – 80 pmol FR/puff) and on a per unit basis (327 – 817 ug AC/cigar and 99 – 639 pmol FR/cigar) with AC being the most abundant aldehyde. The levels of aldehydes and free radicals were higher in little cigars than conventional cigarettes on a per puff basis (25% and 91% higher, respectively) and on a per unit basis (93% and 176% higher, respectively). The larger per unit difference arises, in part, from the greater number of puffs required for the little cigars to reach a similar butt length as cigarettes. Also, we found that the levels of aldehydes and free radicals were highly correlated in little cigars (r^2 = 0.49, p < 0.02). Altogether, these findings indicate that oxidant exposure to little cigar smokers appears to be greater than that of cigarette smokers. This new data will help in our understanding of the relative harm due to oxidative damage in the rapidly growing population of little cigar smokers.

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POS4-86 PRO-OXIDANT CONTENT OF MAINSTREAM SMOKE IN POPULAR COMMERCIAL CIGARETTES
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Oxidative damage has been cited in the 2010 Surgeon General’s report as one of the major causes of tobacco related diseases. Yet, there have been no systematic studies to quantify pro-oxidants from different commercial cigarettes and the impact of these exposures on oxidative stress in smokers. This study measured pro-oxidant content (free radicals and aldehydes) in mainstream smoke from a variety of popular cigarettes with diverse characteristics currently in the US market. Mainstream smoke from cigarettes was generated on a smoking machine under the nonintensive Federal Trade Commission (FTC) regimen. Gas phase free radicals were spin trapped with alpha-phenyl N-tertiary-butyl nitrate (PBN) and quantitated by electron paramagnetic resonance (EPR). Whole smoke aldehydes (acetaldehyde, crotonaldehyde, acetone, acrolein, butanal, formaldehyde and propanal) were derivatized with 2,4 dinitrophenylhydrazone (DPNH) and quantitated by HPLC. We find a wide variation (7-fold) in levels of highly reactive free radicals among different cigarette brands (25 to 176 pmole tempol equiv per cigarette). Similarly, a wide variation (4-fold) in total aldehydes was observed (231 to 1056 ug per cigarette). Overall, total aldehydes were highly correlated with free radicals (r=0.48, p<0.001). The wide variation in pro-oxidant levels are, in part, accounted for by filter ventilation, as well as by other cigarette features (eg. type of tobacco, tobacco mass, paper porosity) currently under investigation. Further, mainstream smoke from menthol cigarettes appear to have higher levels of pro-oxidants compared to non-menthol brands. This is the first study to quantify pro-oxidant content in a wide variety of commercial cigarettes. Our findings that certain brands/types of cigarettes produce substantially higher levels of pro-oxidants compared to others suggest that these brands/types may pose a greater health risk to the user.

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POS4-87 A COMPARISON OF RISK AND BENEFIT PERCEPTIONS OF E-CIGARETTES, CIGARS, AND CIGARETTES AMONG OLDER CURRENT AND FORMER SMOKERS
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The increase in non-cigarette tobacco consumption is a public health concern because all tobacco products are harmful, yet how smokers’ perceptions of harm compare across products is unknown. In the last decade, smoking prevalence has declined in all age groups in the US except for older smokers (≥ 45 yo). From 2010 to 2013, there was more than an eight-fold increase for current use of e-cigarettes among 45-64 year olds and nearly a 20-fold increase among former smokers. Major gaps exist in our knowledge of perceptions of risks and benefits and how they influence use and intention to use among older smokers. The purpose of this study was to: Determine older current and former smokers’ perceptions of tobacco-related risks, benefits, and acceptability of use for cigarettes, cigars, and e-cigarettes; and compare perceptions of risk across products. We conducted a cross-sectional national survey of 494 current and former older smokers (>45); including 69% dual users of cigarettes and e-cigarettes or cigars. To compare the ratings among the three products we used a generalized linear model which incorporated the generalized estimating equation method to adjust for the repeated measures. Post hoc pairwise comparisons were adjusted for multiple comparisons using the Tukey-Kramer method. SAS v9.4 was used for computations. Results: Perceptions of risk of addiction and tobacco related disease was greatest for cigarettes, less for cigars and least for e-cigarettes (X2.6 SD 1.2). There were significant differences among all means (p<.0001). Across tobacco related diseases (oral, lung, head neck or throat cancers; COPD; heart attack, Alzheimers; and other tobacco related diseases) cigarettes were identified as highest mean risk scores, then cigars, and the least risk was e-cigarettes (p<.0001). The one exception was for cigars: head neck or throat cancer was perceived as having the greatest risk and oral cancer mouth, the highest risk. This study will add to the limited knowledge about current and former older smokers’ perceptions of alternative tobacco and nicotine products, especially e-cigarettes, and how these perceptions motivate patterns of tobacco use.

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POS4-88 PREDICTORS OF PROVIDER ADHERENCE TO TOBACCO USE TREATMENT GUIDELINES AND ORGANIZATIONAL PRIORITY
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Given the oral health consequences of tobacco use and that most smokers see a dentist annually, dentists have a credible role in treating tobacco use. Unfortunately, adoption of tobacco use treatment (TUT) guidelines is suboptimal in dental care settings. As part of a cluster randomized clinical trial testing systems-level strategies for implementing TUT guidelines, we conducted surveys of dental care providers in NYC. Providers were asked about frequency of delivering the recommended 5As of brief TUT (asking about tobacco use, advising smokers to quit, assessing readiness to quit, offering quitting assistance and arranging follow up). Perceived Organizational Priority (POP) was assessed using an 8 item questionnaire. Items included ‘One of this clinic’s main goals is to help tobacco use more effectively’ and ‘Tobacco use treatment is a top priority at clinic’. Responses on a 5-point Likert scale ranged from 1=not true to 5=definitely true. Responses were aggregated into mean summary scores for TUT and POP scales. Independent t-tests and ANOVA were used to test for group differences between categorical variables. Spearman’s correlation coefficients were used to test for associations between continuous variables. General practice dentists provided more TUT (means 2.6 and 1.9, p =.02) and POP (3.2 vs 2.7, p =.07) than oral specialists. Dentists who were never smokers offered more TUT (means 2.4 vs. 2.0, p=.05) than ever smokers. Former smokers offered more TUT than current smokers (means 2.3 and 2.0, p=.02). TUT was lower for more senior dentists with longer time in practice (r =.24, p =.01). In dental clinics with an electronic reminder system (ERS), more TUT was offered than in clinics with no ERS (means 2.5 and 2.1, p=.02). Females reported higher POP than males (mean 3.3 vs. 3.0, p=.02). Attendings reported higher POP than dental residents (3.3 vs 3.0, p =.06). System changes including implementation of ERS may increase dental care provider adherence to TUT guidelines and provide more TUT to current smokers and those who began practicing before scope of dental practice endorsed TUT may benefit from additional training and practice change engagement.

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POS4-89 THE RELATION OF SMOKING MOTIVATIONS AND BIO-MARKERS OF TOBACCO EXPOSURE IN AFRICAN AMERICAN AND CAUCASIAN SMOKERS
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The prevalence of smoking is similar for African American (AA) and Caucasian (C) smokers, however racial health disparities related to tobacco use are evident. AA smokers exhibit greater dependence, more tobacco-related health problems, and are less successful at quitting as compared to C smokers. Prior research suggests that motivations for smoking may be different between these two groups, potentially contributing to this disparity. The current research focused on understanding how motivations for smoking differ between AA and C smokers, and how this may relate to bio-markers of tobacco exposure and smoking patterns. 120 healthy volunteers were studied; 61 AA and 67 C, 74 males, 54 females. Participants completed the Reasons for Smoking Scale, questionnaires about tobacco use, and provided bio-samples for analysis of plasma cotinine, urine total nicotine equivalents and urine NNAL. AA smokers were significantly more likely to be motivated to...
smoke for indulgent reasons ($p<0.01$) and C smokers for stimulation ($p<0.05$). When correlating reasons for smoking to bio-markers of exposure in the entire sample, indulgent reasons and total nicotine equivalents were significantly, negatively associated ($r=-0.18, p<0.05$). When correlating with smoking behavior, stimulation reasons were significantly, positively associated with cigarettes per day ($r=0.23, p<0.01$). AA smokers alone had significant, positive associations between both stimulation and indulgence with cigarettes per day ($r=0.37, p<0.01$ and $r=0.30, p<0.05$, respectively). Our analysis suggests that AA smokers are motivated to smoke when they can indulge in their experience of smoking, as compared to C smokers who smoke more for stimulation. These sub-scales within racial groups were not significantly associated with bio-markers of exposure, however when considering smoking patterns, in AAs both stimulation and indulgent reasons were connected to higher cigarettes per day. This work provides evidence for differences between racial groups in smoking motivations, and further work should focus on how these motivations may contribute to racial health disparities.

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**POS4-90**

**ELECTRONIC CIGARETTE AVAILABILITY AND ADVERTISING AROUND A SAMPLE OF NEW JERSEY HIGH SCHOOLS**

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**BACKGROUND:** Traditional tobacco retailers are important channels for e-cigarettes, but data on e-cigarette marketing patterns at the point of sale are largely unavailable. Little is known about e-cigarette availability and advertising in retailers accessible to youth, and how marketing differs by store type and community demographics. This study characterizes the e-cigarette retail environment around a sample of five high schools in New Jersey. METHODS: Licensed tobacco retailers within a half-mile radius of 41 New Jersey high schools were surveyed between March and June 2015 (n=194). Researchers documented the availability of e-cigarettes, as well as the presence and number of e-cigarette ads. Tests of association examined whether school enrollment demographics were correlated with proximity to e-cigarette marketing. RESULTS: Nearly 60% of retailers sold e-cigarettes, and availability was especially high in drug stores (89%). Less than half (41%) sold flavored e-cigarettes, with no significant differences by store type. Almost a third of retailers displayed exterior and interior ads (29% and 32%, respectively), but this was substantially more common in convenience stores. Notably, no drug stores displayed exterior e-cigarette ads. A school’s percentage of Hispanic students and the proportion of students receiving free or reduced lunch were positively correlated with the number of e-cigarette retailers and the volume of e-cigarette ads within a half-mile radius. An inverse relationship was observed between a school’s percentage of non-Hispanic white students and local e-cigarette retail and marketing. DISCUSSION: E-cigarette availability is high in the traditional tobacco retail environment. The products are advertised most heavily in convenience stores, historically important outlets for cigarette sales. Consistent with studies on tobacco at the point of sale, e-cigarette retailer density and advertising volume are highest in communities with lower income and a higher percentage of non-white residents. Future studies should examine whether a relationship exists between e-cigarette marketing near schools and rates of e-cigarette use among students.

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**POS4-91**

**LOW SOCIOECONOMIC STATUS IS ASSOCIATED WITH E-CIGARETTE AND TOBACCO PRODUCT USE LATENT CLASS MEMBERSHIP**

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Research suggests that among adolescents, low socioeconomic status (SES) is associated with tobacco use. There have been few examinations of the role of SES in e-cigarette use status. Moreover, existing examinations of tobacco user profiles (e.g. non-users, all-product users) have not considered e-cigarette use. This study aims to a) describe the association between SES and e-cigarette use and b) describe the association between SES and tobacco product user profiles identified via Latent Class Analysis (LCA). Participants (n = 1,932; 50.6% female; 88.6% White; M = 16.0 years) were drawn from a larger school-wide survey conducted in Spring 2014. We assessed SES with the Family Affluence Scale (Boyce & Eccles, 2004), which provides composite scores corresponding to low, medium or high SES. We combined low and medium SES groups into one category, as only 2.1% of participants were low SES. Controlling for race, age, gender, and school, we used logistic regression to examine the association between SES and lifetime use of e-cigarettes. We conducted LCA to identify tobacco user profiles (i.e., latent classes based on blunt, cigarette, cigarillo, cigar, e-cigarette, hookah, and smokeless tobacco use). Controlling for race, age, gender, and school, we used multinomial regression to examine whether SES was associated with tobacco product use latent classes. Results showed that low SES, relative to high SES, was associated with increased odds of e-cigarettes use (OR 1.8; 95% CI 1.4, 2.3). The final LCA solution consisted of 3 classes: non-experimenters (65.4%), e-cigarette/hookah/blunt experimenters (23.3%) and all-product experimenters (11.3%). Both all-product experimenters (OR 1.7; 95% CI 1.3, 2.1) and e-cigarette/hookah/blunt experimenters (OR 1.5; 95% CI 1.1, 2.0) were more likely to report low SES than high SES relative to non-experimenters. In summary, lower SES, relative to higher SES, appears to be a risk factor for e-cigarette and poly-tobacco product use.

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**POS4-92**

**ADOLESCENT USE OF E-CIGARETTES VS. CIGARETTES: THE ROLE OF SMOKING SUSCEPTIBILITY**

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The landscape of adolescent tobacco use is rapidly changing, with recent decreases in combustible cigarette smoking and dramatic increases in the use of e-cigarettes (ECs). Recent national surveillance studies note the emergence of an unexpected trend, specifically EC use among adolescent never-smokers. What is not yet clear is whether initiation of ECs in adolescent non-smokers can be attributed to smoking susceptibility. The present study goal was to investigate the prospective relationship between susceptibility use of cigarettes and ECs. A secondary aim was to compare the perceived harms associated with ECs among participants who had used ECs only, cigarettes only, or both. Data were taken from a longitudinal study of 1,203 6th-8th graders (52% female, 76% White) who completed web-based surveys throughout middle school and high school. Participants were classified as ever-smoking at least one full combustible cigarette (14%) and ever using ECs (14%). Among students who had never experimented with cigarette smoking (never a puff or more), susceptibility to smoking was measured during middle school. Perceived harm of EC use (e.g., being addicted, harming oneself) was measured during high school. Those classified as susceptible to smoking in middle school were more likely to smoke a full cigarette ($R^2=0.34$) and to have used ECs ($OR=1.84$) by high school. Interestingly, susceptible participants were more likely to smoke multiple cigarettes prior to using ECs than the converse. Less perceived EC harm was reported among youth susceptible to cigarettes, and among users of ECs and full cigarettes by high school. Perceptions of harm did not significantly differ between those who had only used ECs, only smoked cigarettes, or used both. Having used ECs and having smoked cigarettes by high school were both prospectively predicted by susceptibility to cigarette smoking, suggesting that both EC use and smoking susceptibility may reflect an underlying willingness to
try tobacco products generally. This conclusion is bolstered by the finding that adolescents who reported susceptibility to smoking in middle school were equally likely to try ECs first as to try cigarettes first.

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POS4-93
SMOKING TOPOGRAPHY COMPARISON AMONG DAILY AND NON-DAILY SMOKERS
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Research interest on non-daily smokers (NDS) has become increasingly important as this population of smokers is growing in the US compared to daily smokers (DS). NDS have peaked curiosity among researchers in that they deviate from what is thought to be a natural trajectory into becoming a daily, addicted smoker; although, it has been reported that NDS take in cotinine and experience difficulty in quitting similarly to DS. To understand NDS’s avoidance to what is the traditional definition of nicotine addiction, two independent studies implemented from 2013-2015 compared adult DS (N=353) and NDS (N=60). Participants completed an at-home interview and answered a series of self-report questionnaires, including demographics, nicotine dependence, stress, and medical history. Participants were given a portable hand held smoking topography device, SODIM Smoking Puff Analyzer-Mobile (SPA-M), to smoke all their cigarettes at home ad libitum either three (DS) or seven (NDS) days. Unique to other studies researching DS and NDS, this study may be the largest to date that has collected such a robust repeated measures sample on smoking topography among these two smoker groups. Smoking topography measures (STM) consisted of mean number of puffs per cigarette, total puff volume, puff duration, intervals between puffs, maximum puff flow, and total smoking duration. Mean cigarettes per day (on days smoked) for NDS averaged 3.2 (SD=1.8) cigarettes and 16.6 (SD=8.1) cigarettes for DS. FTND scores were 0.7 (SD=1.2) for NDS and 4.3 (SD=2.3) for DS. Independent two-sample t-test showed no significant differences between DS and NDS on demographics measures such as gender, age, race, income, with the exception of education (p<0.001). All STM were non-significant between the two smoker groups. While NDS are considered to be lighter smokers and less dependent, based on topography measures they are taking in as much tobacco smoke as DS on a per-cigarette basis. Thus, the results suggest that puffing behaviors vary little by the degree of nicotine dependence. This study concludes that NDS and DS topographically smoke the same, but differ in dependence, remaining discrete populations.

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POS4-94
LUNG CANCER SCREENING AWARENESS AND ATTITUDES AMONG SMOKERS: FINDINGS FROM THE ITC US SURVEY (2013-14)
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INTRODUCTION: Lung cancer is the most lethal cancer in the United States among both men and women. Most cases of lung cancer (57%) are detected after they have metastasized to distant organs; thus the 5 year survival rate is only at 17.4%. The USPSTF in 2013 recommended low dose computed tomography (LDCT) for early detection of lung cancer among those aged 55-80 with a 30 pack-year history of smoking; LDCT is also recommended for 55-80 year old recent quitters (≤15 years). Increasing awareness and use of lung cancer screening could have a large positive impact on public health. METHODS: Data were analyzed from the International Tobacco Control (ITC) US survey (N=5219), a longitudinal cohort telephone survey representative of current adult smokers. In the Wave 9 survey (2013-14), a random sub sample of smoker participants aged 40+ (N=1177) was asked items regarding lung cancer screening knowledge and awareness. RESULTS: Participants were asked: Have you heard of this screening test for lung cancer? 51% replied yes; 47% replied no or don’t know. The participants reporting affirmatively to that question (n = 604) were then asked: Have you ever had a CT scan for lung cancer? 27% replied yes. Of participants (N=162) that had received screening for lung cancer, 51% had received the screening in the past 12 months. Participants who were aware of the lung cancer screening test but had never had a CT scan (n = 427) were asked: Would you have a CT scan for lung cancer if it were recommended by your doctor? 82% replied yes. Chi square tests evaluating possible associations between lung cancer screening awareness and demographic variables (age, gender, income, ethnicity, and education) found no significant differences (p>0.05). No significant differences were detected in lung cancer screening awareness by cigarettes per day, Heaviness of Smoking Index (HSI), or quit intention. CONCLUSION: Results indicate that half of current smokers are aware of LC screening, and about 14% have actually been screened. The majority of those unscreened would be receptive to a screening recommendation by their health care provider. Future research should explore new ways to reach out to smokers and educate them regarding lung cancer screening.

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POS4-95
THE IMPACT OF VIEWING AN ADVERTISEMENT FOR REDUCED NICOTINE CONTENT CIGARETTES ON BELIEFS: EFFECTS ON SUBSEQUENT SMOKING BEHAVIORS
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This study examined the effect of viewing an advertisement for reduced nicotine content (RNC) cigarettes on product beliefs, and how these inferences affected subsequent use of RNC cigarettes. Data were taken from 52 daily, non-treatment-seeking smokers participating in an open-label, randomized trial examining the effects of progressively reduced nicotine content cigarettes (i.e., consecutive 10-day periods of Quest 0.6, 0.3, and 0.05 mg nicotine cigarettes) on smoking behaviors and harm exposure. Participants completed laboratory visits every 5 days, in which they smoked cigarettes through a topography device, provided carbon monoxide (CO) samples before and after smoking, and reported number of cigarettes smoked per day (CPD) throughout the study. At study entry, participants’ beliefs about Quest cigarettes were assessed before and after viewing a Quest advertisement for 30 seconds. The total number of correct and false inferences made about Quest products significantly increased after viewing the advertisement (p’s = 0.004 and < 0.001, respectively). Regarding specific product beliefs, a greater proportion of participants correctly inferred that Quest cigarettes contained less nicotine (p = 0.001), and falsely inferred that Quest cigarettes were less addictive, healthier, made smoking safer, and helped people quit (p = 0.001-0.031). False inferences did not moderate the effects of Quest cigarette use on smoking behaviors; however, CPD and CO were greater throughout the study among participants who falsely inferred that Quest helped people quit compared to those who were unsure or made correct inferences (p’s = 0.012 and 0.033). Results suggest that the advertisement successfully conveyed to most participants that Quest cigarettes contain less nicotine, but that many participants misinterpreted this information to imply additional health and cessation benefits of Quest cigarettes. Findings suggest that great care is needed in determining how low nicotine cigarettes may be marketed to smokers if a nicotine reduction policy is implemented.

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POS4-96
ADAPTATION OF AN AMERICAN ONLINE SMOKING PREVENTION PROGRAM IN ROMANIA
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INTRODUCTION: Online smoking prevention programs became popular in the last time. In order to extend the use of such programs, existing applications can be adapted and translated in the native languages of the target groups. Our goal was to provide a computer-aided intervention with attractive content targeting high school students who are familiar with information and communication technology.

METHOD: ASPIRA is the Romanian/Hungarian adapted version of a smoking prevention program created in United States of America. Prior to apply the questionnaire and ASPIRA online program which contains five modules that include tests, videos and interactive games, the program was tested on a group of schoolchildren and students. The pilot study questionnaires were completed considering the opinions of young people and the functionality of the software.

RESULTS: Above 90% of participants reported a good or very good impression about the ASPIRA program. Only a small minority found that the program included parts which were too long or reported the existence of any technical problems regarding the functionality of the software. 76% of the participants had little or very little difficulty in understanding the messages presented by the English speaking characters. Only 7.5% of the participants thought that the program included content that was not appropriate for the local culture.

CONCLUSIONS: The vast majority of students reported favorite impressions about ASPIRA online program. High school students and boys were more critical. Language and cultural barriers did not have the potential to reduce in a significant manner the effectiveness of the tested program.

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POS4-97
HARDCORE SMOKERS VERSUS OTHER SMOKERS: WHAT MAKES HARDCORE SMOKERS UNIQUE?
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OBJECTIVE: Little is known about what characteristics distinguish hardcore smokers from other smokers. Our aim was to examine whether hardcore smokers have certain socio-demographic, environmental and smoking related characteristics that are unique to them.

METHODS: We used data from 7 cycles of the Tobacco Use Supplement to the Current Population Surveys between 1992-93 and 2010-2011 (n= 361,742). Hardcore smokers were defined as current daily smokers who were at least 26 years old, had at least 5 years daily smoking history, smoked at least 15 cigarettes per day, who had neither made a quit attempt in the past 12 months nor had any intention to quit in the next 6 months. They were distinguished from other current smokers who were at least 26 years of age but did not meet one or more of the other defining criteria for hardcore smokers. Multivariate logistic regression was used to examine the factors determining the probability of being a hardcore smoker versus other smoker, adjusting for important socio-demographic, environmental and smoking-related factors.

RESULTS: 24.33% in sample were hardcore smokers. Older age (p<0.001), non-Hispanic White race/ethnicity (p<0.001), male gender (p<0.001), lower educational attainment (p<0.001), non ‘professional’ occupation (p=0.004), being divorced or separated (p=0.001), lower age of initiation (p=0.001), receiving doctors advise to quit (p<0.001), absence of home or workplace restriction (p<0.001), and residing in a region other than the Northeast US (p<0.001) were associated with higher odds of being hardcore smoker. CONCLUSION: The future direction of tobacco control efforts might have to be shifted toward hardcore smokers who are resistant to such interventions. Special attention needs to be paid to older white male smokers with lower education, non-professional occupation, with earlier age of initiation of smoking, and living in the Northeast. A reallocation of tobacco control resources to provide individualized cessation assistance to hardcore smokers may be required to achieve the long term sustainable decrease in smoking prevalence.

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POS4-99
HOW DO CONSUMERS USE THE CANDIDATE MRTP TOBACCO HEATING SYSTEM (THS): ANALYSIS OF WHOLE OFFER TEST DATA FROM FIVE COUNTRIES
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PMI has conducted consumer studies in five countries for one of its candidate Modified Risk Tobacco Products (MRTPs), the Tobacco Heating System (THS). This type of study is called ‘Whole Offer Test’ (WOT) and consists of a single group, descriptive actual use study of THS. This contribution reports the key results from WOTs conducted in Italy, Germany, Switzerland and South Korea, with respect to actual use behavior of THS during a four week observational period. The analysis was based on participants’ self-reported, stick-by-stick consumption of THS HeatSticks and of conventional cigarettes (CC). The target population was adult smokers living in the country where the study was conducted.

Adult smoker participants were recruited using databases maintained by market research agencies. Enrollment was conducted through interviews at central study locations. By the end of the observational period, the proportion of participants who consumed at least 100 HeatSticks ranged from between 36.1% (Italy) to 76.3% (South Korea). Among those who consumed at least 100 HeatSticks, between 18.0% (Switzerland) and 47.4% (South Korea) had switched to HeatSticks (consumption constituted 70% or more of total tobacco consumption in a given week) and between 39.9% (Japan) and 60.7% (Switzerland) used both CC and HeatSticks. The proportion of participants, amongst those who switched to HeatSticks, who had switched back to CC was very low in all countries, ranging between 0.0% (Japan) and 3.3% (South Korea). Across countries, the most frequently observed patterns were generally stable from the beginning to the end of the observational period. A substantial proportion of participants adopted a usage behavior involving predominant use of HeatSticks right from the first study week and then this behavior continued across the entire observational period. These data were assessed in two distinct regions, Europe and Asia, five different countries, with a minimum of two cities, allowing for the observation of a wide range of potential usage patterns across a broad geographic spectrum and providing premarket information on how consumers actually use THS in a close to real-life environment.

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POS4-100
IMPACT OF HEIGHT AND FILTRATION MEDIA ON SIZE DISTRIBUTION OF INHALABLE FRACTION OF WATERPIPE TOBACCO SMOKE USING A TSI NANOSCAN
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Hookah or waterpipe is increasing in popularity among college students in the US. Waterpipe Tobacco Smoke (WTS) is perceived to be less harmful than cigarette smoke as it passes through a filtration media prior to inhalation by the user. Previous studies have shown that relative to cigarettes, the waterpipe is associated with 4.7 times the number of puffs and 48.6 times the amount of smoke. First pass studies analyzing mainstream hookah smoke found significant concentrations of ultrafine particles, nicotine and polycyclic aromatic hydrocarbons. More recent studies have focused on more complex compound classes including primary aromatic amines, furanic compounds and humectants. Fewer studies have focused on the physical characteristics of the particulate component. There are many variables that may play a role in the physical and chemical characteristics of the particulate component of WTS including the type of charcoal and shisha, the height of the waterpipe, the amount and type of filtration liquid in the bowl and the material and length of hose used to inhale the smoke. Here we present the use of a TSI NanoScan SMPS Nanoparticle Sizer to explore the size and number of par-
icles between 10 and 420 nm in WTS as a function of some of the aforementioned variables. These physical characteristics of the particulate component of WTS are important in evaluating the potential health hazards to water pipe users.

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POS4-101 EXPLORING THE EFFECT OF MARIJUANA USE ON THE ASSOCIATION BETWEEN MAJOR DEPRESSIVE EPISODES AND THE PROGRESSION FROM INITIATING CIGARETTE USE TO SMOKING DAILY AMONG ADOLESCENTS

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BACKGROUND: Comorbidity of tobacco use and depression among adolescents is common. Few studies, however, have assessed the relationship between tobacco and marijuana co-use with depression, despite marijuana’s link to tobacco use. This study examined the effect of marijuana use on the association between major depressive episodes (MDE) and the progression (latency) from cigarette trial to daily use among adolescents. METHODS: Data were from a sub-set of n = 3,035 (unweighted) respondents aged 12-17 in the 2013 National Survey on Drug Use and Health, who reported having ever smoked a cigarette in their lifetime. Separate multivariable logistic regression models assessed the main and interactive effects of latency of progression from cigarette trial (i.e., at age first use) to daily regular smoking and lifetime marijuana use, with the outcomes of lifetime and past-year MDE, adjusting for sex, race, family income, and education. RESULTS: The overall prevalence of MDE in the past year was 15.2%. Lifetime MDE prevalence was 21.9%. Male gender (p=0.001), young age (p<0.001), and visiting stores more frequently (p<0.001) were associated with higher likelihood of noticing POS marketing, in the adjusted analysis. Random digit dialing method of recruitment was associated with lower likelihood of noticing POS marketing (p<0.001) but education was not significantly associated. CONCLUSION: There are significant socio-demographic differences in exposure to POS cigarette marketing. Strict restrictions on outdoor cigarette marketing have resulted in increasing concentration of cigarette marketing at the point-of-sale. Tobacco industry is known for targeting lower SES groups for marketing and policies that eliminate or limit POS cigarette marketing could reduce exposure and possibly increase smoking cessation rates among these vulnerable groups of smokers.

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POS4-102 SOCIO-DEMOGRAPHIC DISPARITIES IN POINT-OF-SALE CIGARETTE MARKETING: RESULTS FROM A POPULATION-BASED STUDY

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OBJECTIVE: Little is known about the disparities in exposure to point-of-sale (POS) cigarette marketing across different socio-demographic groups. Our aim was to examine these disparities using a population-based sample of smokers. METHODS: We conducted a telephone survey to collect data on 999 smokers in Omaha, Nebraska. Cigarette marketing was measured by asking respondents three questions about noticing ads, promotions, and displays of cigarettes within their respective neighborhoods. Survey items were combined into a composite (alpha = 0.64). We estimated OLS linear regression models and controlled for sex, age, race/ethnicity, income, education, cigarette use frequency, and neighborhood poverty score. RESULTS: Male gender (p=0.001), young age (p<0.001), belonging to a race other than “non-Hispanic White” (p=0.014), and smoking among young adults. METHODS: Using data from the 2012-2013 National Adult Tobacco Survey, a nationally representative sample of U.S. adults, we reported rates of

POS4-103 EFFECTIVENESS OF INTERVENTIONS TO REDUCE SMOKING AMONG YOUNG ADULTS IN THE UNITED STATES

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BACKGROUND: Waterpipe tobacco is increasingly becoming the first tobacco product that young people try in the U.S. Given the limited access and portability of waterpipes, smokers who become nicotine dependent over time may be more likely to turn to cigarettes. OBJECTIVES: To examine the relationship between waterpipe smoking and susceptibility to cigarette smoking among U.S. young adults. METHODS: Using data from the 2012-2013 National Adult Tobacco Survey, a nationally representative sample of U.S. adults, we reported rates of
current waterpipe smoking and susceptibility to cigarette smoking by demographic characteristics and use of other tobacco products. Multivariable logistic regression was used to examine the association between current waterpipe smoking and susceptibility to cigarette smoking among young adults, defined as the lack of a firm intention not to smoke soon or in the next year. RESULTS: Among young adults who were never established cigarette smokers (N = 3,297), 11.3% were current waterpipe smokers, 39.7% of which reported being susceptible to cigarette smoking. Waterpipe current smoking was associated with being susceptible to cigarette smoking (odds ratio = 1.9; 95% confidence interval = 1.3, 2.7). Other factors associated with greater likelihood of susceptibility to cigarette smoking included being male, between the ages of 18-21 years, of Hispanic ethnicity, and a current smoker of cigars, cigarillos, or small filtered cigars. CONCLUSIONS: Waterpipe current smoking was associated with susceptibility to cigarette smoking among U.S. young adults. Longitudinal studies are needed to demonstrate causality between waterpipe smoking and initiation of cigarette smoking among young people.

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POS4-105
SUCCESSFUL ENROLLMENT OF A TARGETED POPULATION USING TAILORED COUNTY-LEVEL RECRUITMENT STRATEGIES

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BACKGROUND: Disadvantaged groups have higher rates of smoking compared to their privileged counterparts. Published literature lacks rigorous studies evaluating smoking outcomes in these groups; what literature does exist rarely addresses disparate research participation rates or successful recruitment strategies, especially among geographically defined groups. One major reason may involve the challenges associated with recruiting these populations. METHODS: The Tobacco Cessation Interventions with Appalachian Ohio Smokers Study (AOSS) was a 12 county group randomized trial (GRT) that compared a lay-led face-to-face community-based cessation intervention (rural vs. urban) to a brief telephone quitline intervention in a historically disadvantaged region of Ohio. The AOSS study used specific recruitment strategies, such as routine monitoring of study demographics to identify and target individuals that were representative of the counties where interventions were delivered. Specific contact methods utilized varied by county depending on the population characteristics needed for enrollment. RESULTS: The AOSS recruitment strategies yielded a study sample of 707 participants from counties that was similar across the two study arms and rural county-level demographics. The majority of participants were Non-Hispanic, Whites (86.4% and 95.1%, respectively), 25-54 years old (64.4%, female (67.8%), and at least a high school education or the equivalent (87.3%). The average age of smoking initiation was 17.7 years and current daily cigarette consumption was 21.6. The intervention and control arms were also similar for employment and health insurance status, poverty level, self-rated health, nicotine dependence, and other individual factors. CONCLUSION: Strategic recruitment efforts, including routine monitoring of study demographics to identify and target individuals, facilitated study implementation and enhanced accrual resulting in the recruitment of 707 participants from Appalachia Ohio with no differences in sociodemographic and tobacco-related characteristics between participants in the control and intervention conditions.

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POS4-106
THE RELATIONSHIP OF CIGARETTES AND CIGARS TO OLDER ADULTS’ MARIJUANA USE: EVIDENCE FROM THE NATIONAL SURVEY ON DRUG USE AND HEALTH

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The well-documented risks of smoking are compounded in older adulthood. Older adults who smoke have a longer history of smoking than younger smokers and are more likely to suffer from smoking-related morbidity and mortality. Previous research has documented that initiation of tobacco use is one of the greatest risk factors for developing later substance addictions. Additionally, prior research has suggested a relationship between conventional cigarette and marijuana use. However, little is known about the dual use of these products among older adults. The goal of this study was to more fully understand the relationship between tobacco products (i.e., conventional cigarettes, cigars) and marijuana use among older adults. We explored the relationships among use of these products using data from 6,325 older adults (age 50 and older) who completed the 2013 National Survey on Drug Use and Health. Variables of interest included sociodemographic characteristics, tobacco use (i.e., conventional cigarettes, cigars) and marijuana and blunts (i.e., cigars filled with marijuana) use. Adjusted odds ratio (AOR) for past month marijuana use were generated for each variable.

Overall, 3.5% of the older adults surveyed reported past month marijuana use; higher prevalence was noted for those who were past month users of conventional cigarettes (18.3%); lower prevalence was noted for past month cigar use (2.7%) and past month blunt use (0.4%). Logistic regression models yielded significant odds ratios and among older adults, the greatest odds for past month marijuana use was associated with conventional cigarette use (AOR = 3.25, 95% CI). The findings demonstrate that the use of conventional cigarettes is highly associated with marijuana use among older adults. Tobacco regulatory science and tobacco control efforts nationwide that target older adults must tailor efforts effectively, with consideration of other products, including marijuana.

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POS4-107
PROMOTING TOBACCO PREVENTION AMONG SOMALI YOUTH IN THE TWIN CITIES, MINNESOTA USING SOCIAL MEDIA

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Somali youth in Minnesota perceive that 64% of their peers smoke. Since high perceived prevalence increases tobacco-use intentions and initiation, targeted tobacco prevention efforts are needed. Social media has been identified as an avenue for tobacco prevention. The goal of this project was to develop tobacco prevention messages targeted towards Somali youth in Minnesota and disseminate the messages using social media. This project utilized a community-based participatory research approach with a partnership between the University of Minnesota and WellShare International. Three tobacco prevention videos were developed by Somali youth using focus groups that were used to inform the content of the messages and format (videos). The videos were then distributed on YouTube, Facebook, and Twitter in order to examine the feasibility of spreading tobacco prevention videos among Somali youth using social media. The number of views, shares, and likes over a three-month period were recorded. The three tobacco prevention videos were posted on several Facebook pages including a WellShare International Somali youth program page called The Young Achievers (TYA) and TYA staff and youth pages; as well as on youth in TYAs’ twitter accounts. At the end of the three-month period, there were 451 views, 48 shares, and 53 likes across the three videos. Views, shares, and likes accumulated quickly at the beginning of the three month period, with little increase from months two to three, even though the videos continued to be posted online. Social media represents an inexpensive opportunity to disseminate tobacco prevention messages. During a short period of time, we were able to spread tobacco prevention messages to a large number of individuals, given our small target population of immigrant Somali youth in the Twin Cities, MN. Future research should focus on evaluating the impact of spreading tobacco prevention messages using social media on tobacco use among Somali youth.

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POS4-108
DEVELOPMENT OF A MICRO-COLD VACUUM TRAP FOR HOOKAH TOBACCO AND TOBACCO ALTERNATIVE SMOKE VOC COLLECTION

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In the summer of 2009, the FDA obtained authority to regulate the manufacturing, distribution, and marketing of cigarettes and smokeless tobacco products. The Family Smoking Prevention and Tobacco Control Act was passed to reduce the trend of new users forming an addiction to tobacco before they were of the age to have an understanding of the toxic and even deadly consequences. However, other tobacco products, such as hookah apparatuses, water pipe tobacco, e-cigarettes, and other tobacco or tobacco free alternatives were not controlled until very recently, April 24th, 2014, when the FDA announced they were in the beginning phases of supervising the new alternative cigarette niche. Shisha Steam Stones are one alternative tobacco product the CDC currently admits to having no available research. These small pebble-like rocks are coated in a viscous flavored formulation, consisting mostly of glycerin, which is placed in a hookah head as an alternative to hookah tobacco. In order to analyze for the volatile organic compounds in hookah tobacco smoke, solid phase micro extraction (SPME) was used in tandem with gas chromatography mass spectrometry (GCMS). A smoking machine was constructed to mimic a hookah apparatus, where the smoke passed into miniature cold vacuum trap suspended in a dry ice + acetonitrile cold bath at -40°C and collected in NMR vials cut to a length of 2 centimeters. The VOCs found into miniature cold vacuum trap suspended in a dry ice + acetonitrile cold bath at -40°C and collected in NMR vials cut to a length of 2 centimeters. The VOCs found

POS4-111
EFFECT OF RECENT E-CIGARETTE ADVERTISEMENTS ON YOUNG PEOPLE’S INTEREST IN USING E-CIGARETTES AND SMOKING TOBACCO CIGARETTES

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BACKGROUND AND AIMS: There are concerns advertising for e-cigarettes may indirectly encourage tobacco smoking. The aim of this study was to run a pilot experiment to test if exposure to current e-cigarette advertising elicits a stronger interest in future e-cigarette and tobacco cigarette use in young non-smokers than exposure to nicotine replacement therapy (NRT) advertising. METHODS: Six e-cigarette advertisements recently cleared for television broadcast in the United Kingdom and freely available online were combined into a three-minute video; 2 further cleared adverts were not available. Six recent NRT advertisements were combined to form a video of equivalent length. Sixty-five 16-19 year old non-smokers living in the United Kingdom were randomised to viewing either video. Main outcome measures were visual analogue scales assessing a) interest in using e-cigarettes and b) interest in smoking tobacco cigarettes; these were completed before and after viewing the adverts and completing a distractor task. Mixed two-way analyses of variance tested the effect of advertisements on outcomes while adjusting for confounders. RESULTS: There was no significant group by time interaction for either interest in using e-cigarettes [F(1, 62)=0.81, p=0.372, n=0.005] or smoking tobacco cigarettes[F(1, 61)=0.30, p=0.86, np=0.001], suggesting the e-cigarette adverts did not increase interest when compared to the NRT adverts. CONCLUSIONS: In a small sample of UK teenage non-smokers, recently broadcast e-cigarette advertisements did not increase interest in e-cigarettes or smoking immediately after exposure. Generalisability of these findings may be limited.

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POS4-112
TAX RECIPROCITY AGREEMENTS AS A STRATEGY TO REDUCE TRIBAL TOBACCO SALES IN OKLAHOMA

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The U.S. Supreme Court addressed the issue of discount tobacco retailing on tribal lands in three landmark decisions, Moe (425 US 463, 1976), Colville (447 US 134, 1980), and Potawatomi (498 US 505, 1991). In essence, these decisions established that, while sales to on-tribe members should be free from state tax liability, sales to non-members of a tribe were subject to state tax. In his dissent to the Colville opinion, Justice Brennan argued that these rulings biased the law against tribal governments in that they compel the State to enact a tax without risking any attendant loss of business for its retailers while the Tribes must court economic harms when they enact taxes of their own. This paper suggests that the logical extension of Brennan’s point is that state-tribal tobacco tax sharing arrangements should be subject to reciprocity. Thus, if nontribal sales within tribal jurisdictions are subject to state taxes, sales to tribal members within state jurisdictions should be subject to tribal taxes. Since the tracking of which sales go to on-tribe members is administratively impractical, the asymmetry of current law has led to arrangements wherein tribal sales pay state tax at discounted rates, to allow for the fact that some tribal sales will be to on-tribe members. Using Oklahoma data, we present calculations to demonstrate that, via these arrangements, the tribes tend to benefit from using price discounting to increase market share. Revisions to current law or negotiated state-tribe agreements that brought symmetry into this relationship would encourage either sales quota systems or, more simply, tax revenue apportionment agreements. Using Oklahoma data, we demonstrate that (1) all Oklahoma tribes currently selling cigarettes would almost certainly do financially better under quota or revenue apportionment regimes and (2) that under these arrangements, there would be little incentive to price discount. We conclude that more reciprocity in state-tribal tobacco tax treatment would lead to reduced tobacco consumption, higher market share for nontribal retailers, and increased tribal revenue. The application of this result to other states is also discussed.

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INTRODUCTION: Under the 2009 Family Smoking Prevention and Tobacco Control Act, the U. S. Food and Drug Administration (FDA) was given authority to regulate cigarettes and some other tobacco products. Little is known about public awareness and perceptions of FDA in their new role as a tobacco regulator. This research utilizes focus groups to examine perceptions of FDA as a tobacco regulator so that FDA can better communicate with the public about this new role.

METHODS: We conducted six focus groups lasting approximately 90 minutes each. Diverse samples were ensured by recruiting smokers and non-smokers, African Americans, and gay, lesbian, and bisexual individuals, and segmented them into separate groups. All groups were audio taped, transcribed, and analyzed using Atlas.ti qualitative software. Participants were asked if they had heard of FDA, what they know about FDA, and if they associate FDA with tobacco. Participants were then informed that FDA regulates some tobacco products and asked their thoughts about this role. RESULTS: A total of 41 individuals participated in the six groups. Although nearly all participants had heard of FDA, most were not aware that FDA has regulatory authority over any tobacco products, and did not associate the role of FDA with tobacco at all. Some participants drew comparisons between FDA’s work in tobacco and their work in regulating food and drugs. Some were reassured that an agency with extensive regulation experience took on this work;
others were concerned that this role may not fit well with FDA's other regulatory responsibilities. DISCUSSION: Our findings suggest that for FDA to become a reputable regulator and source of information regarding tobacco, they should inform the public about their tobacco regulatory work. FDA may also want to address public confusion about their role as tobacco regulator and what that means for the safety of tobacco products.

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**POS4-113**

**DO TREATMENT SEEKING SMOkers USE E-Cigarettes differently Than the General Population?**

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**BACKGROUND:** Good data will be crucial in making sense of the increasing popularity of e-cigarettes and determining next steps. Unfortunately, there is little guidance on how best to measure e-cigarette use. A recent study on e-cigarette measurement by Amato, Boyle and Levy (2015) found that among a random sample of adults who used e-cigarettes in the past 30 days in the Minnesota Adult Tobacco Survey (MATS), a cluster reported very infrequent use and were more likely to report curiosity as a reason for use. The authors suggest removing those with less than 6 days of use in the past 30 when defining e-cigarette prevalence.

**METHODS:** More research is needed to see if this pattern holds true for different groups. We conducted similar analyses on a different population – individuals who sought treatment from Minnesota’s statewide tobacco cessation program. A total of 1,117 participants enrolled in services from May to July, 2014, then answered questions about their tobacco and e-cigarette use seven months later; 840 (75.2%) had used cigarettes (current smokers) and 149 (13.3%) had used an e-cigarette in the last 30 days at follow-up. RESULTS: Overall, e-cigarette users at follow-up were split between “infrequent” use (<8 days, 34.6%), “intermediate” use (6-29 days, 31.5%), and “daily” use (30 days, 33.9%). Compared to smokers from the general population, fewer current smokers who had recently sought treatment reported infrequent use (27.3% for MATS vs. 14.5% for our study). However, the proportions reporting intermediate (11.2% vs. 8.9%) and daily (3.4% vs. 3.9%) use were similar. E-cigarette users seeking treatment who were abstinent from all other tobacco products were more likely to be using e-cigarettes daily, compared to those using e-cigarettes in combination with other tobacco products (55.6% versus 28.8%, p=0.03). CONCLUSIONS: Findings suggest that for those who have recently sought treatment for tobacco, infrequent e-cigarette use may be less common than among the general population of smokers. However, collecting days of use is still important as there appear to be differences in cessation behavior between daily and non-daily e-cigarette users.

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**POS4-114**

**COMPARING SMOKING CONSUMPTION TRENDS OF HISPANIC/ LATINO NATIONALITY GROUPS IN CALIFORNIA AND THE UNITED STATES BETWEEN THE 1990s AND 2000s**

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The California Tobacco Control Program (CTCP) is one of the first statewide tobacco control initiatives in the nation to combat preventable deaths attributed to smoking. Although the CTCP has been shown to be successful in several fronts, there is a dearth of research comparing smoking behaviors of Hispanic/Latino (H/L) nationality groups living in California (CA) and the remaining United States (US). This study examined smoking behaviors among Mexicans, Puerto Ricans, Cubans, and Central/South Americans living in CA and the remaining US during the 1990s and the 2000s. We examined the association between sociodemographic factors and heavy daily smoking across decades among these H/L groups. We analyzed data between 1992 and 2011 from the Current Population Survey-Tobacco Use Supplements to examine the prevalence of heavy daily smokers (20 or more cigarettes per day [cpd]), moderate daily smokers (6-19 cpd), and light (0-5 cpd) and intermittent smokers (occasional/non-daily smoking) among H/L groups across decades (1990s and 2000s) by state residence (CA and the remaining US). Weighted logistic regression controlling for age, education, gender, and language of interview was conducted to explore the relationship between heavy smoking, state residence, and race/ethnicity across decades. In CA, there was a 51% decrease in Puerto Rican heavy smokers and a 38% decrease in Mexican heavy smokers between decades. In the US sans CA, there was a 28% increase in light and intermittent smokers among Cubans between decades. Across decades, those who self-identified into a H/L group were less likely to be heavy smokers compared to non-Hispanic Whites. Moreover, those living in CA were less likely to engage in heavy smoking compared to those living in the rest of the US (1990s: ORadj=0.65, 95% CI=0.64-0.67; 2000s: ORadj=0.55, 95% CI=0.53-0.56). Results of this study illustrate California’s success in reducing cigarette consumption among particular H/L groups over two decades. Further research is needed to examine quitting behaviors, as well as smoking trends among H/L groups across various states in the US.

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**POS4-115**

**NICOTINE CONCENTRATION IN ELECTRONIC CIGARETTE USED BY ADOLESCENTS**

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Electronic (e-) cigarette use is rising rapidly among adolescents. This study examined the nicotine concentrations (NCs) used in e-cigarettes by adolescents. It also determined if NC is associated with 1) frequency of e-cigarette and cigarette use; and 2) perceptions that e-cigarettes help with withdrawal, craving, quitting, and reducing cigarettes smoked. We conducted school-wide surveys in 5 high schools and 2 middle schools in 2014 (n = 5,133). We restricted the analysis to lifetime e-cigarette users with complete data on study variables (n=550; 42.24% female; M age = 15.89 years). Students were asked “What concentration of nicotine do you typically use?” We classified NC into 3 groups: ≥18 mg as high, 12 mg or 6 mg as medium, and 0 mg as nicotine-free. We used multinomial logistic regression, accounting for clustering by school and adjusted for age and gender, to examine whether NC was associated with past-month e-cigarette use, past-month cigarette use, and perceptions that e-cigarettes help with withdrawal, craving, quitting, and reducing cigarettes smoked. Overall, 57.8% of lifetime e-cigarette users reported past-month e-cigarette use, 26% reported past-month cigarette use, 13.8% used high NC, 23.8% used low NC, and 62.4% used nicotine-free e-cigarettes. A majority of students agreed that e-cigarettes “help to deal with nicotine withdrawal” (40.4%), “help to deal with tobacco cravings” (38.9%), “help people quit smoking” (38.4%), and “help to reduce smoking”(43.5%). Multinomial logistic regression demonstrated that, compared to nicotine-free e-cigarette users, high and low NC users reported higher days of past-month e-cigarette use (M high =15.16 days, M low = 9.33 days, M nicotine-free =2.87 days; p≤0.001) and past-month cigarette use (M high =13.32 days, M low = 4.77 days, M nicotine-free =0.5 days; p<0.001). NC use was not associated with perceptions that e-cigarettes would help with withdrawal, craving, quitting smoking, or reducing cigarettes. These results suggest that many adolescents use nicotine-free e-cigarettes and those who report more frequent e-cigarette and/or cigarette use are more likely to use higher NCs. Future research is needed to determine how e-cigarette NC correlates with nicotine dependence in youth.

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POS4-117
PERCEPTIONS ABOUT PRODUCT FEATURES AND THE PERVERSANESS OF BLUNT USE AMONG YOUNG ADULT CIGARILLO USERS

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BACKGROUND: Current cigar use is highest among young adults in the U.S., and the popularity of cigarillos likely influences these rates. Despite the extremely diverse cigarillo market, few studies have explored user perceptions of product attributes and how these features relate to blunt use. METHODS: Semi-structured telephone interviews with young adult cigarillo users assessed patterns of use and perceptions about product characteristics such as brand, flavors and packaging. Researchers identified major themes that emerged during the interviews, and Atlas.ti was used to conduct a thematic content analysis of interview transcripts. Qualitative findings were cross-referenced with data from the National Survey on Drug Use and Health (NSDUH) to examine generalizability. RESULTS: Between April-July 2015, 36 young adult cigarillo users from 20 states across the U.S. completed an interview. Most (51%) were male, 20 were Black, and 16 were White. About 47% of users were between the ages of 18-24 years. A majority (64%) of cigarillo users voluntarily disclosed that they use the product almost exclusively for blunt use. Participants generally agreed that cigarillos are predominantly used to smoke marijuana; however, this behavior was rarely reported among Black & Mild users. This finding seems to be substantiated by 2013 NSDUH data. Among young adult cigar users in the U.S., only 27% of Black & Mild smokers reported blunt use in the past month, compared to over half of young adults that use other popular cigarillo brands. Flavors were said to mask the taste and smell of tobacco, and enhance the flavor of marijuana. Re-sealable foil pouches (i.e., 2 or 3 packs) were preferred packaging styles, as they were reported to keep the products fresh and are also used as storage for partially smoked cigarillos, blunts, and unused marijuana. DISCUSSION: Although participants agreed that most cigarillos are “designed for blunt use,” patterns of use differ by brand. Population surveillance studies should include measures on brand and blunt use to more accurately describe the relationship between cigarillos and marijuana, particularly among young adults. Research is needed to identify product attributes driving growth in cigarillo sales at the national level.

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POS4-118
PREDICTORS OF ELECTRONIC CIGARETTE AND ALTERNATIVE TOBACCO PRODUCT EXPERIMENTATION AMONG ROMANIAN ADOLESCENTS

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OBJECTIVES: To assess socio-demographic and smoking-related predictors of e-cigarette and alternative tobacco products experimentation in a multi-ethnic group of adolescents in Tirgu Mures, Romania. METHODS: The cross-sectional study included 1,835 high-school students from Tirgu Mures, Romania. Socio-demographic variables and data about smoking and alternative nicotine and tobacco product experimentation were collected using an online questionnaire. Chi-square tests or one-way ANOVA were applied to compare never smokers, experimenters but current non-smokers, and current smokers. Binary logistic regression was conducted to determine the predictors of experimentation with alternative nicotine and tobacco products. RESULTS: The most frequently tried alternative nicotine and tobacco products were e-cigarette(38.5%), cigar (31.4%) and waterpipe (21.1%). Ever trying and current use of cigarettes were the most important predictors of alternative nicotine and tobacco products experimentation. Gender, ethnicity, sensation seeking and perceived peer smoking were predictors of several alternative tobacco products experimentation. CONCLUSION: The results of this study can be used to tailor prevention programmes to reduce experimentation with alternative nicotine and tobacco products in multi-ethnic communities.

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POS4-119
THE DOCTOR WILL SEE YOU NOW: PHYSICIAN TOBACCO SCREENING AND ADVICE TO QUIT AMONG ADOLESCENTS

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INTRODUCTION: Electronic cigarettes (e-cigs) are widely portrayed as healthy in comparison to tobacco cigarettes. While focusing on a population base who has knowledge of health sciences we assess the attitudes, beliefs and social consequences of comparative portrayal of e-cigs. METHODS: Data was collected from professional healthcare students enrolled at Western University of Health Sciences aged 18+ who voluntarily participated in this anonymous online survey (WesternU IRB Approval # 15/IRB/038). Participants were asked about their history of tobacco and e-cig use, as well as their current beliefs about the use and safety of cigarettes and Electronic Vaping Devices (EVD). RESULTS: Of the 354 participants, over half (193) reported that they had ever tried a tobacco cigarette while only a third of participants (113) reported that they had ever tried an EVD. The older age group was more likely to ever try a tobacco cigarette and less likely to try an EVD, while the opposite was found of the younger age group. Of these participants who reported ever trying a tobacco / electronic cigarette, we found that about one third reported regular use of tobacco / electronic cigarettes, re-
speculatively. Among regular users, 12.5% reported using a tobacco product on at least 10 of the last 30 days, whereas 43.7% reported using an EVD on at least 10 of the last 30 days. Additionally, the younger age group was much more likely to believe that EVD vapor is "harmless", but they were also more likely to believe that tobacco smoke is less harmful than the older age group. CONCLUSIONS: The age differences in ever trying these products is possibly due to the fact that EVDs and non-premium cigars are being marketed to the younger group at the age when most people experiment with cigarettes. While we find similar rates of regular use among those who had ever tried the products, we find that the EVD users are more than three times as likely to maintain regular heavy use. Finally, the finding that the younger age group is more likely to perceive tobacco smoke as less harmful despite having proficient knowledge of basic healthcare is startling and should be cause for concern to public health officials.

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POS4-121

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While prevalence of cigarette smoking among young adults (YAs) has decreased in recent years, the rate of cigar smoking has increased. The U.S. Food and Drug Administration (FDA) banned characterizing flavors in cigarettes, but flavors in other tobacco products, including cigars, are still manufactured and promoted by tobacco companies. Currently, premium cigars are excluded from the FDA’s proposed rule to deem cigars subject to the Tobacco Control Act. This study examined past 30-day flavored and premium cigar use among YAs ages 18-34 in the U.S. from 2011-2014 using data from the Legacy Young Adult Cohort Study. Correlates of current cigar use were assessed using P values from adjusted Wald tests. Weighted averages were calculated for frequency of use by cigar type (number of days used in the past 30). Adjusted logistic regressions were used to determine demographic correlates of flavored vs. non-flavored use and premium vs. non-premium cigar use. Any current cigar use (Weighted N=1,295) vs. current use of any other tobacco product (Weighted N=4,973) was higher among males, and non-White respondents (p<0.001). On average, users of flavored cigars reported using cigars 5.3 days per month compared to 3.6 days per month among users of non-flavored cigars. Premium cigar users reported an average use of 1.9 days per month compared to 4.5 days for non-premium cigar users. There were significantly greater odds of premium cigar use (Weighted N=57) among Whites [aOR=3.53 (95% CI: 1.03, 12.13)] and those with at least some college education [aOR=5.64 (95% CI: 1.19, 25.83)]. Younger adults (18-24 years) [aOR=0.50 (95% CI: 0.33, 0.75)] and females [aOR=2.03 (95% CI: 1.30, 3.15)] had significantly greater odds of flavored cigar use (Weighted N=593) than older young adults (25-34 years) and males, respectively. Among young adults, any cigar use is more prevalent among males and non-White respondents. However, different patterns exist for use of premium and flavored cigar products. Extending FDA regulatory authority to all cigar products may help to ensure potential reductions in other (non-cigarette) tobacco use extends to all types of cigar users.

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POS4-122
EFFECTIVE DEVELOPMENT AND TESTING OF HEALTH COMMUNICATION CAMPAIGNS FOR YOUNG ADULTS: CORRECTING PERCEPTIONS ABOUT CONVENTIONAL AND NEW & EMERGING TOBACCO PRODUCTS

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Young adults are targeted as new consumers of both conventional and new & emerging tobacco products. Use of new and emerging tobacco products such as hookah, electronic cigarettes, and snus are rising with limited access to accurate information regarding their health effects. The young adult population is dynamic, requiring an innovative approach to delivery of health communication information. This research will inform the Food and Drug Administration (FDA) of effective communication strategies for delivering health messages and assess the receptivity and comprehension of the harmful effects of tobacco and nicotine products among young adults. A text message library containing information related to various tobacco products has been created and tested. The text message structure is influenced by the Elaboration Likelihood Model of effective routes of persuasion. The conceptual framework of messages was divided into categories of perceived depth (complex vs. simple), framing (gain vs. loss) and appeal (emotional vs. rational). Focus groups were conducted in two Houston Community Colleges among 18-25 year old, ethnically diverse students. Students reported on familiarity with these products, popularity of their use, and preference of messages. A secondary review by 56 university students enrolled in health communication departments is underway. Students rate the depth, framing and appeal on a Likert scale across 960 text messages. A review of a subset of messages was conducted by experts in the fields of tobacco and health communication in the fall of 2014. Over 50% recognized the "simple/loss/rational" message type however only 18% could identify a "complex/emotional" message with the gain and loss framing. Modifications to the subset (296) of text messages were made and further edits will take place after the secondary review. Formal testing of text message designs will be conducted among 640 Houston Community College students with a longitudinal randomized design. Students will receive 1 of 8 message types, each representing a unique combination of characteristics based on a 2x2 factorial design. We will identify the most potent of eight message combinations. Alexander V. Prokhorov*, M.D., Ph.D., Karen S. Calabro, M.P.H., Dr.P.H., Tamara C. Machado, M.A., Gabrielle Botello, B.A., Kalarznya Czemski, M.L.A., Sophia Russell, M.P.H., MacKenzie Dobkins, B.S., The University of Texas MD Anderson Cancer Center, Department of Behavioral Science, Houston, Texas

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POS4-123
A MINIMAL EXP TO PROMOTE SMOKE-FREE HOMES AMONG 2-1-1 CALLERS: TEXAS GULF COAST EFFECTIVENESS TRIAL

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BACKGROUND: Adequate testing for effectiveness after an Exp’s efficacy is established is rare. With National Cancer Institute support, this report is an exception, the 2nd effectiveness trial (after North Carolina) that tested Emory University’s Smoke-free Homes Exp (themed "some things are better outside") with 3 mailings + a coaching call) delivered by trained 2-1-1 staff rather than the efficacy trial’s university research staff. AIM: Test the effectiveness of Smoke-free Homes in partnership with the Texas Gulf Coast 2-1-1 call-center in a catchment area with a large English-speaking Hispanic population. METHODO: English speakers from smoking-discordant households (>1 smoker + >1 non-smoker) randomly assigned to Exp or Ctl’s were followed by phone at 3-, 6-mos by interviewers blinded to group. RESULTS: 6.4% were eligible; 81.4% consented (n=508). Participants were female (84%), smokers (71%), with children (68%), Af Am (65%), single (58%), and very low income (50%, <$10,000/yr). Hispanics (12%) and White, non-Hispanics (19%) comprised main racial/ethnic sub-groups. Most Exp’s (72%) received coaching calls. After 3 mos 31% of Exp’s reported full bans compared to 20% ofCtl’s (intent-to-treat analysis, non-respondents=failures, p=0.003).

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**POS4-124**

**PLACEMENT OF ELECTRONIC NICOTINE DELIVERY SYSTEMS IN TRADITIONAL TOBACCO RETAILERS IN CHARLOTTE, NC**

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**OVERVIEW:** Electronic nicotine delivery systems (ENDS) are widely available among traditional tobacco retailers; however, no regulations on placement within stores exist. We explored ENDS placement by sub-type at the point-of-sale.

**METHODS:** In Spring 2014, we conducted systematic assessments of 91 tobacco co-selling retailers, including supermarkets, convenience stores, pharmacies and tobacco shops in Charlotte, NC. Trained assessors recorded ENDS placement in the store and proximity to other products (cessation aids/candy/to tobacco/alone). We assessed three ENDS types based on the following: E-cigarettes (disposable and cartridge varieties), e-hookahs (product labeled by manufacturer as e-hookah); tank systems and e-liquids.

**RESULTS:** All supermarkets, tobacco shops, and pharmacies and 49.3% of convenience stores kept e-cigarettes behind the counter (p=0.01). E-cigarettes were placed with tobacco in all store types, except pharmacies, which placed them with cessation aids (100%), as well as with other tobacco (91.7%). E-hookahs were only available in convenience stores and were kept either behind (51.4%) or on/in front of the counter (40.5%). Tank systems and e-liquids were available behind the counter in 60.5% of supermarkets, and on/in front of the counter in 61.4% of convenience stores (p=0.006). Some convenience stores kept e-hookahs, tanks, and e-liquid alone (54.1%, 67.4% and 75%), and e-liquids were also found in many convenience stores: e-cigarettes (10.1%), e-hookah (13.5%), tank systems (11.6%) and e-liquid (9.1%).

**CONCLUSIONS:** Most retailers placed ENDS behind the counter with other tobacco products. However, convenience stores placed them in several locations, including on/in front of the counter and with candy, potentially making them accessible to youth. Pharmacies only carried e-cigarettes and placed them with both cessation aids and other tobacco products. Findings highlight the need for ENDS placement regulation at the point-of-sale and further surveillance.

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**POS4-125**

**LGBQ STATUS, DEPRESSION, AND STAGES OF SMOKING INITIATION IN A STATEWIDE SURVEY OF HIGH SCHOOL YOUTH**

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Lesbian, Gay, Bisexual and Questioning (LGBQ) youth appear to be at greater risk for initiating smoking, and increased prevalence of depression among this group may compound this risk. We examined the relative risks of youth advancement across the Stages of Smoking Initiation (SOSI) using LGBQ status and depression as indicators of risk. The SOSI algorithm uses youth cigarette smoking behaviors and attitudes to approximate status in the process of smoking initiation. Youth were classified into one of five SOSI: Protected (approximation of Precontemplation), At Risk (approximation of Contemplation), Preparation, Action, and Maintenance. Data were derived from the 2013 Maryland Youth Tobacco and Risk Behavior Survey (MYTRBS), a classroom-based survey of 53,785 public high school youth. The data were examined for differences in SOSI by sexual orientation (LGBQ vs Heterosexual), endorsement of any past year depressive episodes, and the interaction between these predictors (LGBQ x depression), controlling for gender effects on initiation status. Using a weighted subsample with complete data on key variables (N=167,113), a Multinomial Logistic Regression revealed significant main effects of LGBQ status (β=-1.090, p<.001) and past year depression (β=2.422, p<.001) on advancement in SOSI (being in At Risk, Preparation, Action, or Maintenance stages, relative to being Protected) controlling for gender. Moderating effects of past year depression on the relation between LGBQ status and SOSI were also found (β= 56.07, p<.001), with recently depressed LGBQ youth displaying the highest relative risk for being in the At Risk, Preparation, and Action stages relative to being in the Protected stage (OR=1.28, p<.001; OR=1.20, p<.001; OR=1.55, p<0.003, respectively). Depression did not appear to moderate the relative risk of being in the Maintenance stage of initiation (OR=0.99, p=.887). These findings suggest that LGBQ status and recent depression represent important risk factors for initiating smoking. Tobacco prevention efforts that target LGBQ youth, with a particular emphasis on depressed LGBQ youth, may help to address sexual orientation-based disparities in smoking risk.

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**POS4-126**

**ENGAGEMENT WITH ONLINE TOBACCO MARKETING AND ASSOCIATIONS WITH TOBACCO PRODUCT USE AMONG U.S. YOUTH: FINDINGS FROM WAVE 1 OF THE POPULATION ASSESSMENT OF TOBACCO AND HEALTH (PATH) STUDY**

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**BACKGROUND:** Online tobacco marketing has proliferated over the past five years due to increased expenditure from the tobacco industry and growth in user-generated content on social media platforms. We examine online engagement with tobacco marketing and its association with tobacco use. **METHODS:** Cross-sectional analysis of 13,651 12-17 year olds who participated in Wave 1 (baseline) of the Population Assessment of Tobacco and Health (PATH) Study. The study measured 10 forms of engagement with online tobacco marketing: 1) signing up for email alerts about tobacco products; 2) visiting or registering on tobacco websites; 4) liking following or sending link about tobacco brand on social networking site; 6) playing online game related to tobacco brand; 7) using smart phone to scan quick response (QR) code; 8) scanning QR code for a tobacco product that took respondent to tobacco website; 9) receiving online discount coupons, and 10) receiving information from tobacco companies online. Multivariable analyses examined associations between level of online engagement and tobacco use. **RESULTS:** An estimated 2.6 million US youth (11%) engaged with at least one form of online tobacco marketing. Online engagement was independently associated with susceptibility to use of any tobacco product: adjusted odds ratio [AOR] 1.54 (95% CI 1.28-1.85) for 1 level of use.

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engagement and AOR 2.14 (95% CI 1.24-3.69) for ≥2 levels. Online engagement was also independently associated with ever having tried tobacco: AOR 1.20 (95% CI 1.00-1.44) for 1 level of engagement and AOR 1.43 (95% CI 1.02-2.00) for ≥2 levels. In contrast, online engagement was not independently associated with past 30-day or poly tobacco product use. CONCLUSIONS: Online engagement with tobacco marketing may represent a novel risk factor—independent of receptivity to traditional marketing—for onset of tobacco use in youth.

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**POS4-127**

DOES NEIGHBORHOOD SOCIAL COHESION MODIFY THE RELATIONSHIP BETWEEN NEIGHBORHOOD SOCIAL NORMS AND SMOKING BEHAVIORS IN MEXICO?

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BACKGROUND: Neighborhood social norms and neighborhood social cohesion may in combination influence smoking behavior, however results from prior research have been mixed. We examined the separate and combined relationships of neighborhood-level social norms and social cohesion with smoking behavior in a cohort of Mexican smokers. METHODS: We used data from a panel of adult smokers and recent ex-smokers who participated in the 2011 and 2012 administrations of the International Tobacco Control Policy Evaluation Survey in Mexico. A total of 2144 participants were nested within 150 neighborhoods across 7 cities. Using generalized estimating equations, we estimated associations between neighborhood-level smoking norms and social cohesion and individual smoking behaviors. Neighborhood smoking norms were measured as the proportion of residents in each neighborhood who believed that society disapproves of smoking. Neighborhood social cohesion (connectedness in a group) was measured using a 5-item cohesion scale aggregated to the neighborhood level. RESULTS: Neighborhood anti-smoking norms were associated with less successful quitting (RR=0.88, 95% CI 0.84–0.93). Neighborhood smoking norms were not associated with smoking intensity, quit attempts or relapse. However, neighborhood social cohesion modified the relationship between neighborhood smoking norms and smoking intensity: residents of neighborhoods with weaker anti-smoking norms and low social cohesion had higher smoking intensity than smokers in other neighborhood types (i.e., higher social cohesion and stronger anti-smoking norms). Neighborhood social cohesion also modified the impact of neighborhood social norms on quit attempts: smokers living in areas with weaker anti-smoking norms and low cohesion had fewer quit attempts than smokers living in other neighborhoods. CONCLUSIONS: Results from this research suggest that neighborhood-level anti-smoking norms may promote smoking cessation, particularly in neighborhoods with low social cohesion. Differences in results between this study and others performed in high-income countries may reflect variations in social context, such as differing histories of tobacco control.

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**POS4-128**

CROSS-NATIONAL PREVALENCE AND CORRELATES OF FORMER SMOKING STATUS IN TURKEY AND THE UNITED STATES

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INTRODUCTION: Quitting smoking is beneficial to health at any country. Still, relatively little is known about what predictors are associated with former smoking status in non-US populations. This study is to compare adult former smoking status in Turkey and the U.S. and identify predictors of former smoking status. METHODS: Data were from the 2012 Global Adult Tobacco Survey (Turkey; N=9,581) and the National Adult Tobacco Survey (U.S.; N=80,192). Both datasets are nationally representative and cover tobacco use, secondhand smoke exposure, and cessation. Bivariate analyses were employed to compare key study variables between the two countries. Odds ratio and 95% confidence intervals from logistic regression modeling were used to estimate factors associated with former smoking status. RESULTS: Compared to the U.S., Turkey has significantly less former smokers (65.9% vs. 14.2%; p<0.001). After controlling for country, older age (OR=0.8; 95% CI: 1.03-1.04), having a high school diploma or equivalent (OR=1.18; 95% CI: 1.09-1.28), never allowing smoking in the home (OR=1.69; 95% CI: 1.54-1.87), and believing that cigarettes are moderately or very harmful to a person’s health (OR=1.30; 95% CI: 1.01-1.66) are all significant predictors of former smoking status. Female gender (OR=0.64; 95% CI: 0.61-0.66) and allowing smoking in the vehicle (OR=0.86; 95% CI: 0.81-0.92) significantly decreased the odds of being a former smoker. Country did not significantly predict former smoking. When each country was analyzed separately, similar predictors of former smoking status were found with the exception of education. While higher education levels were predictive of former smoking status in the U.S., the findings were non-significant for Turkey. CONCLUSIONS: Cessation endeavors should emphasize the importance of not allowing smoking in personal spaces, such as at home and in the vehicle, in order to increase overall cessation efforts. Further research is needed to identify cross-national differences in other predictors of former smoking status, such as health events, cost of tobacco products and coverage of smokefree policies, which were not captured in this study.

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**POS4-129**

VARIATIONS IN LABEL INFORMATION AND NICOTINE LEVELS IN ELECTRONIC CIGARETTE REFILL LIQUIDS OF SOUTH KOREA: REGULATION CHALLENGES

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INTRODUCTION: In South Korea, the consumption of liquid nicotine used in electronic cigarettes has dramatically increased from 4310 L in 2012 to 7220 L in 2013. This study aimed to examine the level of heterogeneity of contents of the labels and discrepancy of the nicotine content between that indicated on the label and the actual nicotine concentrations of each product were measured by a blinded analyst at Roswell Park Cancer Institute, NY, US. RESULTS: Three out of 15 imported liquid refill products of South Korea. METH- ODS: We purchased 32 electronic cigarette liquid refill products (17 Korean domestic, 15 imported ones) and one pure nicotine product at six different electronic cigarette retail stores in Seoul between May and June 2014. The actual nicotine concentrations of each product were measured by a blinded analyst at Roswell Park Cancer Institute, NY, US. RESULTS: Three out of 15 imported liquid refill products provided manufacturing dates, while expiration dates were available on eight products. The range of nicotine concentration was from “not detected” to 17.5 mg/ml. Labeling discrepancies of the concentrations ranged from -32.2% to 3.3% among electronic cigarette liquid refill products. The highest concentration (150.3 ± 7.9 mg/ml) was found in a sample labeled as “pure nicotine”. CONCLUSIONS: There is no standardization of labelling among electronic cigarette liquids sampled from retail stores and the labels did not reflect the content accurately. One product labeled “pure nicotine” raises concerns, since it may be poisonous to consumers, especially to children. This study revealed the urgent need for the development of product regulations in South Korea.

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POS4-130 ELECTRONIC CIGARETTES AND ACCEPTABILITY OF ADULT SMOKING AMONG FLORIDA MIDDLE AND HIGH SCHOOL STUDENTS: RENORMALIZATION OF SMOKING?

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With the rapid increase in the prevalence of electronic cigarette (EC) use in recent years, the public health community is concerned that EC use may re-normalize smoking, particularly among adolescents. However, no studies to date have examined how ECs are associated with acceptance of smoking. We used data from the 2014 Florida Youth Tobacco Survey (n=69895) to assess whether living with EC users, using ECs, and exposure to EC advertising are associated with perceived peer acceptance of adult smoking. Weighted regression models were used, adjusting for demographics, living with a smoker, past-30-day smoking, and exposure to EC advertising. Analyses were stratified by middle and high school students, and lifetime smoking (ever and never smokers). We found that among youth who never smoked, exposure to EC advertising and EC use were positively associated with perceived peer acceptance of adult smoking (p<0.01). Living with EC users was associated with perceived peer acceptance of adult smoking only among high school never smokers (p<0.05). Among youth ever smokers, exposure to EC advertising was positively associated with perceived peer acceptance of adult smoking (p<0.01); only EC use and exposure to EC advertising were indirectly associated with susceptibility to cigarette smoking (p<0.01); only EC use and exposure to EC advertising were indirectly associated with susceptibility to cigarette smoking (p<0.01); only EC use was directly associated with susceptibility to cigarette smoking (p<0.01); EC use, living with smokers, and exposure to EC advertising were directly associated with susceptibility to cigarette smoking (p<0.01). A subsequent mediation analysis using structural equation models showed that among middle school never smokers, EC use, living with EC users, and exposure to EC advertising were directly associated with susceptibility to cigarette smoking (p<0.01); only EC use and exposure to EC advertising were indirectly associated with susceptibility to cigarette smoking (p<0.01); only EC use was directly associated with susceptibility to cigarette smoking (p<0.01); EC use, living with smokers, and exposure to EC advertising were directly associated with susceptibility to cigarette smoking (p<0.01). In conclusion, ECs may increase the acceptability of smoking, which could lead to subsequent smoking initiation among youth. This could jeopardize public health efforts to reduce smoking through denormalizing smoking.

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POS4-131 TRENDS IN USE OF ELECTRONIC CIGARETTES, COMBUSTIBLE TOBACCO, AND NONCOMBUSTIBLE TOBACCO AMONG U.S. MIDDLE AND HIGH SCHOOL STUDENTS, 2011-2014

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BACKGROUND: Electronic cigarette (e-cigarette) use increased significantly among U.S. youth during 2011-2014. However, trends in patterns of e-cigarette use with concurrent use of combustible and noncombustible tobacco is uncertain. We assessed trends in exclusive and concurrent use of e-cigarettes, combustible tobacco (cigarette, cigar, hookah, pipe, bidi), and noncombustible tobacco (smokeless, snus, dissolvables) among middle and high school ever smokers (p<0.05). A subsequent mediation analysis using structural equation models showed that among middle school never smokers, EC use, living with EC users, and exposure to EC advertising were directly associated with susceptibility to cigarette smoking (p<0.01); only EC use and exposure to EC advertising were indirectly associated with susceptibility to cigarette smoking (p<0.01); only EC use was directly associated with susceptibility to cigarette smoking (p<0.01); EC use, living with smokers, and exposure to EC advertising were directly associated with susceptibility to cigarette smoking (p<0.01). In conclusion, ECs may increase the acceptability of smoking, which could lead to subsequent smoking initiation among youth. This could jeopardize public health efforts to reduce smoking through denormalizing smoking.

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POS4-132 FACIAL EXPRESSIONS OF EMOTION PREDICT DECREASES IN INTENTION TO SMOKE AMONG ADOLESCENTS

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BACKGROUND: Research on message design has indicated that smoking prevention interventions among teens that provoke emotional responses, such as fear and disgust, are effective in reshaping intention to smoke. One emotionally involving intervention is called a smoking prevention interactive experience (ASPIRE), which involves activities and videos about the effects of smoking. ASPIRE has been found to lower smoking initiation among adolescents. However, little is yet known about ASPIRE’s ability to elicit emotions that can drive health behavior outcomes. This study examines the relationship between facial muscular expression of emotions during 2 ASPIRE videos and change in intention to smoke. METHODS: Pre-test/Post-test study design was conducted with 45 adolescents who were presented with ASPIRE. Intention to smoke was measured three days before and immediately after the intervention. Also, during ASPIRE use, the face of 19 randomly selected adolescents were video-recorded. Change in intention to smoke was calculated by subtracting intention at pre-test from intention at post-test. Facial expressions of emotions were identified using a software program that applies the facial action coding system to identify facial movements. Six basic emotions were identified: happiness, anger, sadness, disgust, fear, and surprise. Emotions were coded for a dramatic and humorous video about social situations and a graphic video of oral and maxillo-facial cancer due to smoking. RESULTS: After using ASPIRE, adolescents significantly decreased in intention to smoke. The extend of facial expressions of sadness and fear during the dramatic video was significantly related to a decrease in intention to smoke. Also, the extend of facial expression of fear during the graphic video was significantly related to a decrease in intention to smoke. CONCLUSION: This study presented physiological evidence of a link between facial expression of emotions and ASPIRE’s success in decreasing intention to smoke. Future studies may examine facial expression of emotion as a result of all videos and activities in ASPIRE in order to identify the elements of ASPIRE that are most successful.

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POS4-133  
**VAPOUR ISN’T WATER: PERCEPTIONS AND EFFECTIVENESS OF E-CIGARETTE HEALTH EDUCATION MESSAGES AMONG COLLEGE STUDENTS**

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**BACKGROUND:** College students have numerous misconceptions about e-cigarettes, including: e-cigarettes produce water vapor, do not contain nicotine, and do not contain harmful chemicals found in conventional cigarettes. Purpose: This project was designed to test the effectiveness of three message strategies to communicate e-cigarette risks. METHODS: Using items that measured knowledge, Theory of Planned Behavior constructs (attitude, social norms, perceived behavioral control, and behavioral intentions), and message perception, this study used a 2x2 between subjects experimental design via an online questionnaire. The first measured factor was e-cigarette ever use (user vs. non-user). Participants were randomly assigned to the second factor, message strategy, which included: e-cigarette vapor is not water (A), most e-cigarettes contain nicotine (B), e-cigarettes are not regular (C), or no messages (D). Participants (n=294) were 18-40 years old (M=20.3, SD =2.04; 72.1% female). RESULTS: Overall, participants had significantly greater knowledge about e-cigarettes when exposed to strategy A [m=4.89, sd=0.86] compared to those who showed the control (D) [m=4.29, sd=0.80]; where users were most informed by A [m=4.99, sd=0.75] and non-users by B [m=4.99, sd=0.75]. None of the messages strategies resulted in a significant decrease in attitudes, subjective norms, perceived behavioral control, or behavioral intentions toward e-cigarettes. Overall, non-users had significantly greater attitudes toward all message strategies [F(1,213)=4.24, p<.05] when compared to users. Conversely, users perceived all message strategies to be significantly more relevant [F(1,211)=6.59, p<.05] than non-users. Looking at specific messages, strategy C was perceived as the most informative and novel (significantly so when compared to strategy A), even though these perceptions do not align with increases in knowledge. CONCLUSION: Findings indicate that although participants perceived the most novel messages to as the most informative, the reality is the opposite. Participants had greater knowledge of e-cigarettes when shown direct, less abstract, messages.

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POS4-134  
**MOTIVATIONS FOR DUAL USE OF CIGARS AND CIGARETTES AMONG AFRICAN AMERICAN YOUNG ADULTS**

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Dual use of cigarettes and cigars (little cigars, cigarillos, large cigars) among African American young adults is increasing in the U.S., even as overall tobacco use has declined. Reasons for dual use in this high risk population are unclear. To explore and characterize the reasons for dual use among African American young adults aged 18-29 years, we used a mixed methods participatory approach called concept mapping that integrates qualitative data generation techniques with quantitative data analysis. In the Washington, D.C. area, a total of 30 participants (mean age 24.7 years, 63% male) brainstormed reasons for dual use, pile sorted them into groups, and rated their importance for past 30-day cigarette use, past 30-day cigar use, initiation of cigarette smoking, and initiation of cigar smoking. Most (70.0%) were daily cigarette smokers, and a third (33.3%) were daily cigar smokers. Researchers used multidimensional scaling and hierarchical cluster analysis to create graphical maps of the clustered reasons for dual use, which were interpreted by participants. Participants brainstormed 64 unique reasons for dual use and identified a 6-cluster solution as the most accurate representation. The 6 clusters were: Urges, Lifestyle, Access, Product Characteristics, Outside Pressure, and Emotions. Emotions had the highest average rating of importance for all four behaviors, but differed significantly by gender and education. Urges were rated equally important for cigarette and cigar use, and differed by education and spending money. Product Characteristics were significantly more important for cigar use and initiation than for cigarette use and initiation, and differed by gender, education, and money. Outside Pressure was more important for cigar than cigarette use, and differed by gender and education. Findings show that emotions and urges are important points for intervention to address dual use, particularly among those of low socioeconomic status. Moreover, further research and regulation of cigar product characteristics are needed to address the increasing use of cigars in this high priority population.

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POS4-135  
**USE OF E-CIGARETTE FLAVORS AND “DRIPPING” AMONG ADOLESCENTS**

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E-cigarette use rates are rising among youth. Evidence suggests that appealing flavors contribute to adolescent e-cigarette initiation. Given the large diversity in e-cigarette flavors on the market, understanding the types of flavors used by youth and their reasons for using flavors is important to reduce the appeal of these products. Emerging evidence also suggests that adolescents find the ability to do “smoke-tricks” and “dripping” (adding e-liquid directly onto the e-cigarette coil) with e-cigarettes appealing. In order to understand both incidence and reasons for use of flavors and “dripping,” we conducted anonymous school-wide surveys in eight CT high schools (HSs) in Spring 2015. Preliminary analysis was conducted with 2 CT HSs (N=2059, 52.3% female, mean age=16.2 [SD=2.99], 48.5% White, 26.4% Black, 28.4% Hispanic) to assess these factors. Of the sample, 24.6% were lifetime e-cigarette users (52.4% female, mean age=16.2 [SD=1.34], 61.5% White, 15.8% Black, 30.7% Hispanic). Among lifetime e-cigarette users, fruit and candy were most popular among a variety of e-cigarette flavors used in the past month (fruit 47.2%, candy 29.4%; prefer to use: fruit 51.3%, candy 30.1%). Reasons for flavored e-cigarette use included: good taste (44.2%), better taste than cigarettes (25.3%), perception that it controls appetite (5.4%), perception that it helps cut down regular cigarette smoking (5.8%), perception that it helps to quit smoking (4.6%), and ability to freshen breath (2.8%). Among lifetime e-cigarette users, 19.3% have used a dripping method. Reasons for dripping included: to produce thicker clouds of vapor (58.4%), to enhance flavors (31.5%), to get a “stronger throat hit” (23.6%), and curiosity (22.5%). Our preliminary results show that HS lifetime e-cigarette users are using fruit and candy flavors and some are manipulating the product to enhance flavors. Ongoing analyses examining similar questions using the larger dataset from six additional schools will also be presented.

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POS4-136  
**SNUS USE AMONG ADOLESCENTS IN NORWAY: EXPLORING MOTIVATION AND IDENTITY USING FOCUS GROUP DATA**

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AIMS: Snus use has increased dramatically among young people in Norway over the last decade, and is now more prevalent than smoking. However, there is a
general lack of qualitative research investigating snus use among youth. The aim of this study is to explore how young snus users describe and give reason for their snus use, with particular attention towards young snus users’ constructions of identity. METHODS: 8 focus group interviews (4 to 8 participants) with daily and occasional snus users (N=44) aged 14-18 were undertaken during 2013/2014. The participants were asked to describe their snus use practices and the significance of snus use in their daily lives. They were also asked to describe their ideas of a typical young snus user. RESULTS: The interviewees described a number of motives for their snus use, including sensory motives, mood modification and snus use as social identification. Snus users who also smoked described nicotine substitution in situations where smoking was not allowed and smoking reduction as additional motives for snus use. Three key snus user identities were read out of the interviewees’ accounts: the pragmatic snus user, the social snus user and the performative snus user. Distinction from smoking was a common line through all three identity constructions. CONCLUSION: The findings indicate a diversity in motives and meanings of snus use among adolescents. Tobacco control interventions for youth must be designed to respond to this complexity.

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POS4-137 RISK FACTORS ASSOCIATED WITH TOBACCO USE AMONG EARLY ADOLESCENTS IN ARGENTINA
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BACKGROUND: In 2012, 20% of 13-15 year-olds in Argentina were current smokers. Our main objective was to identify risk factors associated with tobacco use among early adolescents in this country. METHODS: In 2014, we surveyed first year secondary school students from public and private schools (n=18 and 15, respectively) from three main cities in Argentina. We assessed the prevalence of tobacco use susceptibility among never smokers, ever trial of e-cigarettes and current tobacco use (i.e., last 30 days), and their correlations with traditional risk factors (e.g., age, sex, parental education, smoking amongst network members) and others not previously evaluated in Argentina (i.e., sensation seeking, extent of media access, parental restrictions on media use, and parenting style). RESULTS: Overall, 3,172 students completed the survey; 42 percent of whom were female; the mean age was 12.8 years; and almost 60 percent reported that at least one household member was a smoker. Of never smokers, 27 percent were susceptible to smoking. Having a high sensation seeking score (OR=4.8; 95%CI: 3.1-7.5), having low parental control and support (OR=3.2; IC 95%; 1.7-5.7), having friends who smoke (OR=2.2; 95%CI: 1.8-2.7), having parents who impose few restrictions on media use (OR=2.1; 95%CI: 1.4-3.0), being a female (OR=1.5; 95%CI: 1.2-1.8), and living with a smoker (OR=1.5; 95%CI: 1.2-1.8) were strongly associated with the susceptibility to smoke. Ten percent were current smokers. Having friends who smoke (OR=12.6; 95%CI: 7.8-20.5), having a high sensation seeking score (OR=4.3; 95%CI: 2.2-8.1) and having parents who impose few restrictions on media use (OR=3.7; 95%CI: 2.1-6.5) were strongly associated with smoking. Other associated variables included working for pay, older age, living with a smoker, having repeated a grade and female gender. Few students (1.7%; n=57) had tried an e-cigarette. CONCLUSION: Comprehensive tobacco control legislation in 2013 may help account for the lower prevalence of current smoking we found. However, smoking remains prevalent amongst early adolescents in Argentina. Our results suggest that programs to promote parental media restrictions may enhance smoking prevention efforts.

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POS4-138 TOBACCO AND E-CIGARETTES USE BY EARLY ADOLESCENTS IN TWO LATIN-AMERICAN COUNTRIES ARE ASSOCIATED WITH SCHOOL SOCIO-ECONOMIC STATUS, INDEPENDENTLY OF FAMILY SOCIO-ECONOMIC STATUS
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OBJECTIVE: To determine, among young adolescents from Argentina and Mexico, whether school socioeconomic status (SES) contributes to tobacco and e-cigarette use independent of the effects of family SES. METHODS: Data came from a cross-sectional survey of students, aged 11-16, from 33 Argentinean schools (n=3,172 students) and 60 Mexican schools (n=10,124 students) (n=13,296 students from both countries, pooled data). Family SES was measured as the highest education level completed by the student parent. School SES was measured as the percentage of students with ≤12 years of education. The outcomes were 1) current tobacco use, 2) susceptibility to tobacco use among never smokers, and 3) ever use of e-cigarettes. Using the pooled data, multilevel logistic regression models were estimated regressing current tobacco use and susceptibility to smoking on family and school SES, adjusting for sex, age, country, and exposure to smoking at home. Because of low prevalence of ever use of e-cigarettes in Argentina (1.8%), models regressing e-cigarette use on family and school SES were estimated for Mexico only. RESULTS: 10% of students were current smokers. Among non-smokers, a third were susceptible to smoke. In Mexico, 10% had tried e-cigarettes. Lower family SES was associated with higher likelihood of current smoking, susceptibility to smoke, and ever use of e-cigarettes. Adjusting for family SES, lower school SES was significantly associated with higher likelihood of current smoking (OR=1.16, CI95% 1.08-1.24, for 10% increase in percentage of parents with ≤12 years of education) but unassociated with susceptibility to smoke. In models for Mexico, lower school SES was significantly associated with lower likelihood of use of e-cigarettes (OR=0.88, CI95% 0.79-0.97). CONCLUSION: School SES has an independent effect on smoking and e-cigarette use among young adolescents, above and beyond that of family SES. In this sample, students attending socioeconomically disadvantaged schools were more likely to use e-cigarettes than those attending socioeconomically advantaged schools maybe more likely to use e-cigarettes, suggesting different risk factor profile for each product.

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POS4-139 EVIDENCE FOR A PLATEAU IN THE USE OF E-CIGARETTES SINCE MID-2014: COMPARISONS WITH COMBUSTIBLE CIGARETTE USAGE: TIME SERIES RESULTS FROM A NATIONALLY REPRESENTATIVE SURVEY OF 13-25 YEAR OLDS
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BACKGROUND: Recent reports have pointed to rapid growth of e-cigarette use (ECIG) among youth, and some concomitant decline in combustible cigarette use (CIG). However the published reports provide information only through early 2014. We wondered whether these trends have continued through the present, and also whether the patterns of use for ECIGs and CIGs are comparable. METHODS: In June 2014, we initiated weekly data collection in a nationally representative phone survey of 13-25 year olds [response rate=20%]. Questions addressed various forms of tobacco use, including ECIG and CIG use. Responses are weighted to the population (CPS) on age, gender, race-ethnicity, population density, education (or parental education), region and cell phone only status. Each week a fresh sample is initiated; callbacks can occur for up to four weeks. Through the first 56 weeks of data collection (thru July 2015), the sample includes 4116 respondents. We describe ECIG and CIG ever use, past month use, and heavy use in the past month (>14 days). We look for evidence of over time trends in use, correlating sur-
very month with behavior, and also whether there are trends for subgroups of the population, defined by age, race-ethnicity, gender, or parent education. RESULTS: For ECIG and CIG respectively: 30% and 36% reported ever use, 14% and 17% reported past month use and 3% and 10% reported heavy use in the past month. There is substantial evidence for the quality of the ECIG measures (they are strongly related to age, to CIG use, and predict ECIG use 6 months later). There was no evidence for increases or decreases over the 13-month period in amount of CIG or ECIG use regardless of measure (ever use, past month, and heavy use ECIG r=.02,.01,.01; CIG r=.02,.03,.02). The no trend ECIG pattern was true for almost all subgroups of the population examined. CONCLUSIONS: These data from a national sample of youth and young adults show that ECIG use may have plateaued by June 2014. Also, while ECIG and CIG use are comparable in ever use and any past month use, ECIG use is sharply less frequent each month, suggesting ECIG dependence is less common than CIG dependence.

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**POS4-140**
IDENTIFYING DEMOGRAPHIC, BEHAVIORAL, AND PSYCHOSOCIAL FACTORS RELATED TO SMOKING ESCALATION IN MEXICAN AMERICAN ADOLESCENTS

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Cigarette smoking is the number one preventable cause of death in the United States; smoking in Mexican American (MA) adolescents, the fastest growing segment of the population, remains a major concern. A better understanding of risk factors that lead MA youth to escalate their smoking is needed for this high risk population. N=1,328 MA adolescents joined a cohort in 2005-06. At baseline participants provided demographic, acculturation, and psychosocial data, and reported their smoking status using the Minnesota Smoking Index (MSI). In 2008-09 participants reported their smoking status again. Those who had never tried a cigarette or only had a few puffs in their life at baseline were included in this study. The primary outcome of interest, escalation in smoking status, was defined as moving up the MSI by 2008-09. The psychosocial risk factors included have demonstrated significant associations with smoking initiation in our previous work with this cohort. Univariate logistic regressions were used to examine the effect of each of predictor on smoking escalation. A final multivariate logistic regression model was obtained via manual backward elimination. Of the 973 participants in the current analysis, 48.2% were male, mean age=11.8 (SD=0.8), and 26.0% were born in Mexico. By 2008-09, 283 (29%) escalated their smoking status and 690 (71%) remained the same. Being male (OR=1.88, p<0.01), cognitively susceptible (OR=1.70, p<0.01), and older (OR=1.30, p<0.01), higher levels of anxiety (OR=1.03, p<0.01), having friends who smoke (OR=1.73, p<0.05) and parents with friends who smoke (OR=1.38, p<0.05) increased risk for smoking escalation on the MSI. Higher levels of subjective social status (OR=0.91, p<0.05) were protective against smoking escalation. In contrast to previous work, parents' friends' influence was stronger than the family household influence. Preventative interventions for MA youth could address these risk factors to reduce smoking escalation.

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**POS4-141**
CIGARILLO USE PATTERNS AMONG HIGH SCHOOL STUDENTS IN CONNECTICUT

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Cigarillos are popular among US teens. Despite similarities to cigarettes, cigarillos are not currently regulated by the FDA. Identifying reasons for initiation of cigarillos among youth will help inform regulation and prevention efforts designed to reduce the appeal of cigarillos for youth. We examined cigarillo use rates and reasons for initiation using anonymous school-wide surveys in two CT schools in Spring 2015 (N=2059, 52.3% female, Mean age=16.2 [SD=2.99], 48.5% White, 26.4% Black, and 28.4% Hispanic). We conducted descriptive statistics on all study variables, chi-square tests to assess the associations between those who had tried cigarillos (ever cigarillo smokers) and those who had never tried them (never cigarillo smokers) on study variables, and adjusted logistic regression analyses to identify which reasons for use were associated with more frequent cigarillo smoking in the past 30 days. All analyses controlled for gender, race, and age. The results showed that 9.7% of students had tried a cigarillo and on average, smoked cigarilllos 2.95 days (SD=7.57) in the past 30 days. Relative to never cigarillo smokers, ever cigarillo smokers were more likely to be male (53.1% vs. 45.5%, p=0.043), White (66% vs. 47%, p<0.001), have smoked 100 cigarettes in their lifetime (30.8% vs. 1.5%, p<0.001), and older (17 years old vs. 16 years old, p<0.001). Top reasons for trying a cigarillo were curiosity (47.5%), appealing flavors (36.0%), and use by friends (31.5%). Adjusted logistic regression analyses showed that low cost (p=0.004), parental/familial use of cigarillos (p=0.008), a perception that cigarillos are "cool" (p=0.018), and the ability to change the wrapper (p=0.04) and the amount of tobacco (p=0.002) were associated with greater cigarillo smoking days. Interestingly, trying cigarillos because of "curiosity" was associated with fewer cigarillo smoking days (p=0.004). These findings indicate that preventing the manipulation of cigarillos, increasing the cost through taxation, and parental prevention efforts may deter more frequent use. Restricting appealing flavors may prevent new initiates.

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**POS4-142**
ELECTRONIC CIGARETTES AND ASTHMA AMONG YOUTH: TRENDS, USE, AND THE ROLE OF PERCEIVED HARMFULNESS

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Little is known about electronic cigarette (EC) use among youth with asthma. A prospective study using data from the 2012 Florida Youth Tobacco Survey (FYTS) showed that middle and high school students with asthma were more likely than those without asthma to use ECs. However, it is unclear if this difference has continued over time. We examined the trends in EC use over time by asthma status, the associations between asthma status and frequent EC use, and EC harm perception and EC use among youth with asthma. Data were from FYTS 2012 (n=75550) and 2014 (n=69895). Respondents were asked if they currently had asthma, the number of days they used ECs in the past 30 days, and whether they thought EC are more, equally, or less harmful than cigarettes. Weighted multiple regression models were used, adjusting for demographics and past-30-day smoking. We found that between 2012 and 2014, prevalence of past-30-day EC use in the overall sample increased from 2.8% to 7.9% (a 5.1% increase; p<0.01). The increase in the prevalence of past-30-day use was 6.1% among youth with asthma (from 4.6% to 10.7%), which exceeded the average increase in the overall sample. Youth currently with asthma continued to have a higher prevalence of past-30-day EC use than youth who never had asthma (7.0%, a 4.9% increase from 2.1%, p<0.01). Frequent EC use, defined as using ECs 10+ days in the past 30 days, was also more common among youth with asthma than youth never had asthma in 2014 (2.6% vs. 1.1%, adjusted odds ratio [AOR]=2.07, 95% confidence interval [CI]=1.55, 2.72). Youth with asthma who perceived EC as less harmful than cigarrettes were more likely to have ever used ECs (37.4% vs. 18.5%, AOR=2.92, 95% CI=1.93, 4.44) and had used EC in the past 30 days (22.8% vs. 11.6%, AOR=2.38, 95% CI=1.46, 3.87) compared to youth with asthma who perceived ECs as equally harmful as cigarettes. In conclusion, EC use increased most rapidly and remained the most prevalent among Florida youth with asthma over time, including frequent EC use. Educating youth with asthma about the side effects of EC use (e.g., throat irritation, coughing) may be needed to discourage their EC use.

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POS4-143
LATENT CLASS ANALYSIS OF HIGH SCHOOL STUDENTS CURRENT USE OF E-CIGARETTES AND OTHER COMMONLY USED SUBSTANCES

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Adolescent e-cigarette (e-cig) use is associated with cigarette smoking, but there is little research examining associations between e-cig use and the use of other products (i.e., tobacco products, marijuana, alcohol). As e-cigs gain popularity, developing a better understanding of the link between e-cig use and other substance use is critical to identifying the role e-cigs play in youth substance use. Thus, we 1) examined rates of high school students’ current use (i.e., past month use) of e-cigs, cigarettes, cigars, smokeless tobacco, hookah, blunts, marijuana, and alcohol; 2) used latent class analysis (LCA) to determine profiles of current product use, and 3) used multinomial logistic regression to evaluate demographic predictors (i.e., age, sex, and race) of class membership. Our sample comprised 2,241 students from 3 Connecticut high schools who completed an anonymous, cross-sectional survey in Fall 2013 assessing substance use and had non-missing current substance use data (45.6% male, 65.1% Caucasian, mean age 15.60 [SD=1.19] years). 11.6% of the sample reporting current e-cig use. The optimal LCA solution identified 4 classes: reflecting 1) primarily abstainers (81.6%), 2) primarily e-cig and alcohol users (4.6%), 3) primarily marijuana, blunt, and alcohol users (6.9%), and 4) primarily users of all products (6.9%). Compared to abstainers, all classes were more likely to contain older students (p-values < .001); the E-cigarettes-Alcohol class and the All Products class were more likely to contain males (p-values < .05) and less likely contain African Americans (p-values < .05); and the Marijuana-Blunts-Alcohol class was more likely to contain Hispanics/Latinos (p < .01). In sum, LCA identified 4 substance use classes, two of which included elevated e-cig use. While an older age conferred risk for membership in all substance using groups, sex and race differentially were associated with group membership. Future research is needed to determine if e-cigs are a “gate-way” product for the initiation of other substances and to clarify whether a broader profile of risk characterized by features like impulsivity might explain the current product use profiles.

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POS4-144
ENGAGING TEENS AND YOUNG ADULTS IN A MOVEMENT TO END TEEN SMOKING

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Truth, one of the largest and most successful national branded youth smoking prevention campaigns, launched a new campaign in August of 2014 with messages designed to activate young people to join a movement to end youth smoking by engaging in anti-smoking activities. This study aims to assess whether campaign awareness is associated with engagement in anti-smoking activities over time. A probability-based online longitudinal cohort of 10,011 youth aged 15-21 was surveyed at baseline (pre-campaign launch) and 6 months later (post-launch). Outcomes were based on multiple items that assessed how often the respondent had engaged in anti-smoking activities in the past 3 months, with responses ranging from never (0) to very often (4). Scales were constructed based on multiple items designed to capture the following: conversations in person or on social media about ending smoking or encouraging someone to stop smoking and volunteering or reaching out to leaders about ending smoking. Linear regressions examined the relationship between self-reported awareness of truth campaign ads and the truth brand in the past 6 months and antismoking activities at follow-up, controlling for baseline participation in antismoking activities, and demographic, social, environmental and media utilization covariates. Participants who reported being aware of both the brand and the campaign ads were more likely than those with no awareness to have talked about ending smoking or to have encouraged someone to stop smoking in person (coefficient: 0.15, p<0.01) or on social media (coefficient: 0.04, p<0.05) and to have volunteered and/or reached out to a leader about the movement to end youth smoking (standardized coefficient: 0.07, p<0.01). Findings indicate that awareness of a large-scale branded multimedia smoking prevention campaign significantly increases engagement in campaign-targeted activities to end youth smoking. Implications for future and ongoing campaigns will be discussed.

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POS4-145
HIGH EMOTIONAL RESPONSE TO ANTI-SMOKING AD MEDIATES RELATIONSHIP BETWEEN YOUTH DEPRESSION AND AD RECEPIVITY

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INTRODUCTION: Although research indicates a strong relationship between youth smoking and depression, few if any studies examine differential response to anti-smoking ads based on mental health status. Thus, this study examines the relationship between depression and receptivity to a truth® ad called “Left Swipe” (an upbeat music video encouraging youth to reject dating app profiles featuring smoking photos), and whether this relationship is mediated by emotional response to the ad. METHODS: A nationally representative weekly cross-sectional survey of 15-21 year olds via Research Now’s online panel is used to track response to truth®. This analysis includes everyone asked about the Left Swipe ad (n=1503, Feb-Aug 2015). Respondents indicating they are often unhappy, sad, or depressed were categorized as depressed. Ad receptivity was determined based on a scale of items (e.g., “This ad was convincing”), Those indicating they “strongly agreed” with feeling any 1 of 7 emotions – both positive (e.g., powerful) and negative (e.g., angry) – in response to the ad were categorized as having high emotional response. Mediation analysis in STATA was used to determine if high emotional response mediated the relationship between depression and receptivity. RESULTS: Overall, 22.95% of the sample felt depressed. Multivariate models indicated that odds of having high emotional response were 1.41 times higher (p=0.004) and odds of having high emotional response were 1.87 times higher (p<0.001) for those who were depressed compared with those who were not. However, the relationship between depression and receptivity was no longer significant when emotional response was included in the model. Mediation analysis indicated 54.7% [0.547, 95% CI 0.304, 0.82] of the total effect of depression on receptivity was mediated by emotional response to the ad. CONCLUSIONS: This research suggests depressed youth may be more receptive to certain anti-smoking ads than those who are not depressed, due at least partially to a heightened emotional reaction to such ads. Further studies could shed light on how best to use this information to tailor anti-smoking ads for depressed youth, a population at high risk for smoking.

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POS4-146
COMPARING PERCEIVED EFFECTIVENESS OF FDA-PROPOSED CIGARETTE PACKAGING GRAPHIC HEALTH WARNINGS BETWEEN LGBTQ AND HETEROSEXUAL ADULTS

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INTRODUCTION: Cigarette smoking prevalence among LGBTQ adults is higher compared with heterosexuals in the US (27.2% versus 17.3%). Previous studies found that FDA-proposed graphic health warnings (GHWs) were rated equally effective across race/ethnic, education or income groups of adult smokers. However, we do not yet know the effectiveness of FDA-proposed GHWs among LGBTQ adults. This study addresses the research question: “Do LGBTQ adults rate the FDA-proposed GHWs as more, equally, or less effective compared with heterosexual adults?”

METHODS: From July 2013 to April 2014, we conducted in-person self-administered interviews using tablet computers among 1200 adults (18-70 years) from Boston, Worcester, and Lawrence, MA who were African-American, Hispanic, from low socioeconomic status (SES), have chronic diseases, LGBTQ or blue-collar workers. Participants rated the perceived effectiveness (PE) of nine different FDA-proposed GHWs. We utilized mixed effects regression analyses to predict PE with gender and sexual orientation, adjusting for repeated measurements, GHW content, socioeconomic variables, and health status.

RESULTS: Female heterosexuals (42% of sample) rated all 9 GHWs as more effective than male heterosexual (44%), lesbian (3%), male questioning (1%) and female questioning (1%) respondents. Male heterosexuals reported higher PE than female questioning respondents. There was no significant difference between heterosexuals versus male bisexuals (1%) or female bisexuals (4%). Significant correlates of higher PE included certain GHWs, older age, being African-American (versus white), being Hispanic (versus non-Hispanic), and having less than high school education (versus associate degree or higher). CONCLUSIONS: The analysis found inequalities in PE of GHWs by gender and sexual orientation that have not been previously reported. These results suggest that the 2013 FDA-proposed GHWs would be less effective among LGBTQ persons. We recommend pre-testing future iterations of GHWs among LGBTQ populations or considering alternate communication approaches to communicate anti-smoking messages more effectively to LGBTQ populations.

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POS4-147
NRT STARTER KITS AND QUIT RATES: WHAT INFLUENCES QUITTING?

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BACKGROUND: State tobacco control programs offering free NRT to tobacco users through quitlines have seen positive impacts on their quit rates. In 2014, ClearWay Minnesota launched a new suite of QUITPLAN Services to help Minnesota tobacco users quit. One of the service options was an NRT Starter Kit, a free shipment of a two-week supply of patches, gum or lozenges. This study explored factors associated with quitting among Starter Kit recipients.

METHODS: A random sample of eligible participants (N=1,373) were invited to respond to a 7-month follow-up survey. Respondents completed the survey over the phone or online. Logistic regression was used to identify predictors of quitting (30-day point prevalence abstinence). RESULTS: The study included 818 Starter Kit recipients with an overall quit rate of 25.9%. The following factors significantly increased the likelihood of being quit: using all (vers. some) of the Starter Kit (p<.001), receiving Helpline coaching calls (p=.01), and choosing to receive emails or texts (p=.04). Health factors measured at follow-up that were positively associated with quitting included: excellent (vs. poor or fair) health (p=.01) or zero poor mental health days (vs. 1-13 days: p=.004; 14-30 days: p<.001). Factors negatively associated with quitting included: cigarette use (vs. non-cigarette tobacco: p<.001), longer time to first tobacco use (60 minutes after waking vs. within 5 minutes: p=0.003; 5-60 minutes: p=.02), and seeking advice from a health professional (p=.02). Having Medicare insurance had an interactive effect: Medicare coverage predicted quitting for both men and women when compared to women with either no insurance or non-Medicare insurance (p=.01).

CONCLUSION: Participants who chose to receive an NRT Starter Kit had a quit rate of 25.9%. After adjusting for demographic and tobacco use factors, using all of the medication, enrolling in more QUITPLAN Services and better health status improved chances of being quit at 7 months. The results support offering NRT Starter Kits as an effective option for tobacco users seeking treatment through population-based cessation services.

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POS4-148
DIFFERENTIATING PERSISTENT E-CIGARETTE USERS: ASSESSING THE ACCURACY OF USE FREQUENCY AS A PREDICTIVE MEASURE

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BACKGROUND: In a recent Tobacco Control article, we argued that defining e-cigarette “current use” among adults as any 30-day use included experimenters, many of whom were likely to discontinue use. Based on the 2014 Minnesota Adult Tobacco Survey (MATS), we argued a more restrictive definition of >6 days used out of the past 30 would have utility to discriminate regular users from experimenters. To evaluate that claim, we recontacted respondents one year later to assess how e-cigarette use had or had not changed. METHOD: We created a prospective cohort from a subsample of respondents who agreed to be re-interviewed. All current cigarette smokers and former smokers who had quit within the past two years were invited to participate. Response rate was 50%; the final cohort included 601 adults. Respondents were categorized according to e-cigarette use at the time of MATS 2014 (T1): never users; past users; infrequent users (1-5 days); intermediate (6-29 days); and daily users (30 days). Percentages within each category who had any e-cigarette use (≥1 day) in the 30 days preceding the follow up interview (T2: 1 year later) were assessed. RESULTS: Among current smokers at T1, any e-cigarette use at T2 was reported by 4% of never users, 12% of past users, 29% of infrequent users, 29% of intermediate users, and 76% of daily users. Among former smokers at T1, any e-cigarette use at T2 was reported by 6% of never users, 5% of past users, 0% of infrequent users, 100% of intermediate users, and 100% of daily users. Collapsing across smoking status, most infrequent (73%) and intermediate (63%) users at T1 had discontinued use by T2: in contrast most daily users (70%) remained at the same level. CONCLUSIONS: As predicted, most infrequent users had discontinued e-cigarette use, while most daily users continued. Consistent with our prediction, all former smokers with intermediate e-cigarette use at T1 continued using at T2; however contrary to prediction most current smokers using e-cigarettes with intermediate frequency discontinued use. Future research should seek to improve predictive validity of e-cigarette surveillance measures for current smokers.

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POS4-149
POPULATION MODELING OF MODIFIED RISK TOBACCO PRODUCTS ACCOUNTING FOR CIGARETTE PER DAY

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The FDA’s draft guidance on Modified Risk Tobacco Product (MRTP) applications recommends simulation models to evaluate net public health impacts of MRTP candidates such as electronic cigarettes (e-cigs) and snus. These products might reduce mortality risk among smokers who switch to them, but risks being debated include extended dual use, increased total initiation to tobacco products, relapse of former smokers, role as a gateway to smoking, and long-term health risks of the new product. We developed a two-product simulation model to explore possible
population impacts of an MRTP, illustrating with e-cigs. The cigarette sub-mod-
el incorporates effects of age, gender, cigarette per day (CPD), and time since quitting. The MRTP sub-model allows transitions to and from dual use and the MRTP alone, and effects of dual use on cigarette quit rates. A product use history generator simulates individuals, who are then aggregated over a large random sample. This approach provides greater flexibility than Markov state models, allowing detailed CPD modeling for example. In order to reflect the high uncertainty in long-term prediction, we model a broad range of probability-weighted scenarios. Smokers who add e-cigs without fully switching tend to smoke fewer CPD, reducing mortality risk based on studies of large cohorts of smokers. The relationship of relative mortality risk to CPD appears steepest at very low CPD (e.g., <5-10 CPD), indicating that quitting even from a low CPD level remains better than CPD reduction. We simulated effects of different levels of CPD reduction, starting with distributions of CPD by age and sex from National Survey on Drug Use and Health (NSDUH). Varying the CPD reduction from 0% to >50% had a greater effect on cumulative deaths than varying other assumptions, such as transition rates to and from dual use and relative harm from e-cigs vs. cigarettes. Therefore, simulation models to assess population effects of e-cigs should include benefits from CPD reduction by dual users, in conjunction with added risks from e-cigs. In addition, following up dual-user CPD histories and quit rates over time should be an essential part of post-market studies.

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POS4-150
NEW GENERATIONS OF TOBACCO USERS: ADOLESCENT POLYTOBACCO USE PATTERNS
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From 2011-2014, despite significant declines in cigarette smoking, overall US high-school students’ tobacco use remained over 20%, as iiC cigar, hookah, snus, and other tobacco product use became more common. Although polytobacco use (using more than one tobacco product) is increasingly common, patterns of polytoacco use are poorly described. Latent Class Analysis (LCA) is an empirical method for evaluating probabilistic models for categorizing individuals based on patterns of behavior. The current analysis uses LCA to examine tobacco users in the 2012 and 2013 NYTS, a nationally representative survey of middle and high school students in the United States. Based on Bayesian Information Criteria, the following 9 classes provided the best fit to the data: Cigarette Smokers (32% of sample, probability of cigarette smoking: 1.00, e-cigarettes: 0.14, all other tobacco products: < 0.10), Cigar Smokers (15% of sample, cigars: 1.00), ST: (30% of sample, probability of cigarette smoking: 1.00, e-cigarettes: 0.49, all other tobacco products: < 0.10), Cigarette/Cigar Smokers (11.9% of the sample, hookah: 0.74, pipe: 0.36, cigar: 0.29), Tobacco Smokers/Cheers (10.4% of the sample, cigarettes: 0.87, cigar: 0.89, ST: 0.75), Cigarette/ Hookah Smokers (9.5% of the sample, cigarettes: 0.84, cigar: 0.65, hookah: 0.63, pipe: 0.49, e-cigarettes: 0.36), Tobacco/ Snus Users (4.0% of the sample, ST: 1.00, cigarettes: 0.83, cigars: 0.59, snus: 0.55, e-cigarettes: 0.49, hookah: 0.28, pipe: 0.20), Vapers (3.4% of the sample, e-cigarettes: 1.00, cigars: 0.22), and Polytobacco Users (1.7% of sample, over 0.8 probability for all 9 tobacco product categories). Compared to cigarette smokers and adjusting for sociodemographics, Polytobacco users were significantly more likely to report daily usage (AOR: 2.72, 95% CI: 1.45-5.09), whereas Vapers were significantly less likely (AOR: 0.48, 95% CI: 0.24-0.96). These patterns of tobacco usage suggest that although cigarettes and cigars were the most prevalent forms of tobacco usage, ST, hookah, snus, and e-cigarettes were all prevalent and had various unique associations with other forms of tobacco. Understanding these associations can be helpful in targeting policies to reduce tobacco-related harm.

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POS4-151
ATTITUDES TOWARDS TOBACCO, ALCOHOLIC, AND NON-ALCOHOLIC ADVERTISEMENT THEMES AMONG ADOLESCENT BOYS
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BACKGROUND: The tobacco marketing industry is particularly adept at manipulating specific aspects and themes of advertisements to appeal toward adolescents, significantly influencing decisions to initiate smoking in the future. OBJECTIVES: The objective of this study was to investigate how different advertisement types relate to attitudes in a sample of urban and rural adolescents. Our second aim was to determine if certain themes in advertisements significantly impact adolescent attitudes. Our third aim was to examine if attitudes towards these advertisements differed between urban and rural boys. METHODS: Participants were 11 to 16-year-old Ohio boys residing in either the urban Franklin county or one of six rural Appalachian counties. After enrolling, the boys viewed five advertisements for eight seconds each. After viewing, they rated the advertisement on a 0 to 10 scale. The advertisements were coded for the presence of various themes using a codebook created by the authors. Analysis was done to determine associations between attitude and advertisement type, and between the presence of a theme and the overall attitude measure. RESULTS: There were 341 Buckeye Teen Health Study participants in this study, with 173 (50.73%) from Franklin County and 168 (49.27%) from rural counties. The average attitudes towards alcoholic and non-alcoholic advertisements were significantly higher than attitudes towards tobacco advertisements (p<0.0001). The presence of sex appeal themes in e-cigarettes was significantly associated with higher positive attitudes (p=0.048). Party scenes (p=0.001), and themes of both masculinity (p=0.038) and acceptance (p=0.003) were associated with higher positive attitudes towards smokeless tobacco advertisements. Themes in cigarette and alcohol advertisements had no significant association with attitudes. CONCLUSION: Participants have higher positive attitudes towards themes of sex appeal, masculinity, and acceptance, unsurprising when considering their age and gender. In the future the authors would like to use family and peer tobacco use, participant media literacy, and socioeconomic status to control for confounding variables.

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POS4-152
VALIDATION OF A MEASURE TO EVALUATE NORMATIVE BELIEFS ABOUT E-CIGARETTES
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BACKGROUND: E-cigarette use among teenagers recently surpassed use of traditional tobacco cigarettes and other tobacco products. To guide future prevention and policy efforts, it is necessary to have validated measures to evaluate how youth perceive and respond to e-cigarettes. The current research sought to adapt the Normative Beliefs About Smoking/Smokeless Tobacco measure to e-cigarettes. METHODS: Youth respondents (aged14-17; N=303), completed a web-based survey that included questions on demographic characteristics, tobacco use history and dependence, and a measure to evaluate perceptions of normative beliefs about e-cigarettes. Confirmatory factor analysis was used to evaluate the latent factor structure of the measure. Logistic regression was used to evaluate the concurrent validity with self-reports of tobacco product use. RESULTS: The data confirmed the latent structure for 3 factors: (1) perceived prevalence of e-cigarette use (perceived use), (2) social acceptability (popularity), and (3) approval of e-cigarette use by parents and peers (approval). The measure demonstrated good model fit (CMIN/DF: 1.88, SRFMR: .035, TLI: .977, RMSEA: .05, PCLOSE: .337) and discriminant validity. Logistic regression showed that the scales effectively distinguished heavy and never users of tobacco cigarettes (Perceived use: OR 1.30, CI .98-1.72, Popularity: OR: 2.01, CI 1.46-2.76; Approval: OR: 1.99, CI 1.47-2.68) and e-cigarettes (Perceived use: OR: 1.77, CI: 1.33-2.37; Popularity: OR: 2.05, CI: 1.42-2.97; Approval: OR: 2.11, CI: 1.42-2.97). CONCLUSIONS: Perceptions of adolescents’ normative beliefs about e-cigarettes (perceived use, popularity, and
POS4-153
IMPLICIT PERCEPTIONS OF HARM FOR E-CIGARETTES IN NAIVE AND NON-NAIVE YOUNG ADULT E-CIGARETTE USERS

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BACKGROUND: Little is known about how e-cigarette harm perceptions affect curiosity and use behavior. This study plotted a novel application of the implicit association task (IAT) to measure young adults’ implicit perceptions of harm for e-cigarettes and examine associations of implicit perceptions to e-cigarette and combustible tobacco use.

METHODS: A total of n = 474 participants completed an online IAT as part of Wave 8 of the Truth Initiative Young Adult Cohort Study, a national web-based panel of men and women aged 18-34. The IAT assessed participants’ reaction time to pairing pictures of e-cigarettes and cigarettes with words related to “safe” and “unsafe.” We hypothesized that participants who have lower harm perceptions of e-cigarettes would be quicker at pairing pictures of e-cigarettes with “safe” words than e-cigarettes with “unsafe” words.

RESULTS: 12% had ever tried an e-cigarette. Those who reported e-cigarettes to be more harmful via explicit report were slower at pairing e-cigarette pictures with “safe” words than e-cigarettes with “unsafe” words. We more harmful via explicit report were slower at pairing e-cigarette pictures with “safe” words than e-cigarettes with “unsafe” words. We hypothesized that participants who have lower harm perceptions of e-cigarettes would be quicker at pairing pictures of e-cigarettes with “safe” words than e-cigarettes with “unsafe” words. Regression analyses showed that e-cigarette harm perceptions affect curiosity, e-cigarette use (ever, never, and past-30 day), and explicit reports of e-cigarette harm perceptions were significantly correlated with IAT scores, and accounted for 15% of the variance. Compared to ever and never users, past 30-day e-cigarette users were significantly faster at pairing e-cigarette pictures with “safe” words (F[2, 468] = 4.34, p < .05). IAT harm perceptions did not predict e-cigarette curiosity or use, above and beyond explicit reports, although the effect for e-cigarette use approached significance (p = .08). IAT scores did incrementally predict cigarette use (aOR = 0.47, p < .009), such that those who were faster at pairing e-cigarette pictures with “safe” words were less likely to be past 30-day cigarette users.

CONCLUSIONS: Young adults perceive e-cigarettes as less harmful than cigarettes, and lower harm perceptions may be linked to lower e-cigarette use behavior and allows for examination of puff duration in addition to puff counts.
not be able to detect the lower flow rates observed in experienced ECIG users. In our work, in 5 of 10 ECIG use bouts, a standard device for measuring combustible cigarette topography under-counted puff number, sometimes considerably (e.g., 5 recorded puffs vs. 95 observed puffs). Finally, immediate verification of short-term abstinence in exclusive ECIG users is not possible with measures typically used for cigarette smokers (i.e., exhaled carbon monoxide). Data from our laboratory indicate many ECIG users failed to comply with pre-session abstinence requirements: mean (SD) pre-session plasma nicotine concentrations of 12.6 ng/ml (18.9) suggested that 8/19 ECIG users failed to comply with >8-hr abstinence, compared to a mean of 2.5 ng/ml (1.1) of 11 who appeared compliant. This presentation will address these challenges and inform progression of ECIG evaluation using clinical laboratory methods to provide the best science base possible to inform regulators and protect public health.

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POS4-155 THE RELATIONSHIPS OF E-CIGARETTE EXPECTANCIES WITH E-CIGARETTE USE AMONG HOSPITALIZED SMOKERS: A LONGITUDINAL PROSPECTIVE STUDY

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INTRODUCTION: E-cigarette expectancies demonstrate cross-sectional associations with e-cigarette use behavior, but the prospective relationships between e-cigarette expectancies and e-cigarette use are unknown. The current study examined the longitudinal associations of e-cigarette expectancies with e-cigarette use behavior among hospitalized smokers. METHODS: E-cigarette use (number of days used e-cigarettes in the past 30 days), e-cigarette expectancies (e-cigarette-specific Brief Smoking Consequences Questionnaire-Adult [BSCQ-A]), and tobacco cigarette expectancies (tobacco-specific BSCQ-A) were assessed at baseline hospitalization, 6-month follow-up, and 12-month follow-up among 602 smokers hospitalized in a tertiary care academic center hospital in the Southeastern U.S. Expectancy difference scores (e-cigarette expectancies minus tobacco cigarette expectancies) were computed for each of the 10 BSCQ-A scales. Because participants reported significantly weaker expectancies for e-cigarettes relative to tobacco cigarettes on all 10 BSCQ-A scales, greater difference scores by and large reflected smaller absolute values, i.e., e-cigarette expectancies that more closely approximated tobacco cigarette expectancies. Cross-legged panel models tested the longitudinal relations between e-cigarette use and expectancy difference scores for each of the 10 BSCQ-A scales while controlling for demographic characteristics. RESULTS: Of the 10 BSCQ-A scales, only Taste/Sensorymotor Manipulation difference scores associated with e-cigarette use. The overall fit for this model was acceptable (RMSEA = .076; CFI = .848; SRMR = .037); greater e-cigarette use at baseline predicted greater Taste/Sensorymotor Manipulation difference scores at 6 months (b = .057, p < .05), which in turn predicted greater e-cigarette use at 12 months (b = .37, p < .05). CONCLUSION: Results comport with contemporary theory emphasizing the importance of the drug self-administration ritual and suggest that expectancies that the e-cigarette use ritual more closely resembles that of tobacco cigarettes mediate the relationship between current and future e-cigarette use.

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POS4-157 CHARACTERIZATION OF TOBACCO USE AT SCREENING WITHIN A MULTI-SITE MEDICATION-ASSISTED CANNABIS CESSATION TRIAL

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BACKGROUND: Historically, it has been common for cannabis users to also use tobacco. However, trends in substance use are rapidly changing and substance use are reported to covary with regulations in the United States. As cannabis use increases, data are needed to characterize this population and identify differences among tobacco and non-tobacco users. These data will help to inform treatment interventions for cannabis and tobacco use disorders among co-users. Aim: This secondary analysis is from a multi-site pharmacotherapy trial for cannabis use disorder (CUD) conducted within the National Drug Abuse Treatment Clinical Trials Network. The aim is to characterize tobacco use among a geographically diverse adult treatment-seekig CUD population. METHODS: Participants were adults (ages 18-55) who met criteria for CUD and were interested in quitting. Tobacco use andnicotine dependence were assessed via the Fagerstrom Test for Nicotine Dependence (FTND). This study recently completed enrollment, with only baseline data available at the time of abstract submission. RESULTS: Enrolled participants (N=302) were an average (SD) of 30 (9.0) years of age, 72% were male, 22% were Hispanic, 56% were White, and 28% were African American. Fifteen-one percent of participants were employed, and 91% had a high school diploma (or equivalent). At screening, 38% of the sample self-reported being a current cigarette smoker. Of that sub-sample, FTND scores averaged 3.1 (2.3) on a 10-point scale. Daily smokers reported smoking an average of 10.5 (7.8) cigarettes per day, while non-daily smokers reported an average of 3.1 (2.2) cigarettes on smoking days. CONCLUSIONS: Within this geographically diverse sample, cigarette smoking appeared to be less prevalent compared to other substance use disorder and psychiatric populations. Given lower severity nicotine dependence among this sample, it may be that adding tobacco cessation to cannabis cessation interventions need only be low-intensity to demonstrate efficacy. Though tobacco use was in the minority of this sample, interventions that address both tobacco and cannabis are urgently required for this population, especially in light of increasing cannabis use.

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POS4-158 PASSENGER VEHICLE SECONDHAND SMOKE PARTICULATE MEASUREMENTS

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One in four Minnesota middle school students report that they have ridden in a car with someone who was smoking cigarettes in the preceding week, yet only eight US states have policies prohibiting smoking with youth in vehicles. This study expands on previous research by measuring secondhand smoke particulates under a variety of conditions that affect passenger exposure. A total of 170 trials were conducted, including duplicate trials to determine reliability. The monitoring included continuous photometer measurements of fine particles (PM$_{2.5}$) before, during, and after a participant drove and smoked a cigarette. The instruments were installed in 3 to 5 locations inside the vehicle and 1 outside to measure and compensate for ambient air particulates. Carbon dioxide injection and decay were used to determine the ventilation rate and the PM$_{2.5}$ decay rate was analyzed to determine the total removal rates that included ventilation and absorption. The monitoring was conducted for 3 vehicle types (sedan, mini-van, SUV), 2 driving speeds, 4 window positions, and multiple ventilation operating conditions both summer and winter conditions. With windows closed and the vent fan on, the average PM$_{2.5}$ concentration during smoking ranged from 138 to 2,694 with an average of 1,103.45 ug/m$^3$. After smoking stopped, the PM$_{2.5}$ concentration decreased to the background level. When the activate smoking and post-smoking periods were combined, the passenger’s total PM$_{2.5}$ exposure averaged 165 ug/m$^3$ * hr. The average exposure was 61% higher for city driving (30mph) than highway driving (60mph). The exposure in the rear seats compared to the front varied with window position. Overall, for about half of the trials, the SHS concentration was greater in the rear seats than in the front passenger seat. Opening windows greatly increased ventilation and reduced exposure levels. Opening windows just 2 inches
reduced exposure by almost an order of magnitude and fully opening at least one window reduced exposure by a factor of 34.

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POS4-159
ADDRESSING TOBACCO-RELATED HEALTH DISPARITIES IN ASSISTED LIVING (“ADULT FOSTER CARE”) RESIDENCES
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Smoking among adults with behavioral health problems is a major health disparity issue with approximately one third (at least 1.5 million) of the nation’s 51 million adult smokers suffering from some type of mental illness. Although a number of states and localities have recognized the need for tobacco control and cessation programs to partner with mental health services, most attention has focused on patients in mental health facilities. However, smoking is also pervasive among vulnerable adults who reside in licensed assisted living homes (aka adult foster care facilities) for functionally impaired individuals. The Tobacco Control Legal Consortium – the nation’s legal tobacco control network – is researching policy options for providing smoke-free environments for adult foster care residents. The Consortium – in partnership with nationally known experts in tobacco use, mental illness and smoke-free housing for vulnerable adults – surveyed the national landscape by compiling all state-level laws, policies and regulations that prohibit smoking in adult foster care settings. We analyzed all state-level statutes, rules and regulations related to smoking policies in adult foster care facilities. Our goal was to identify the range of state approaches available and most widely used policy options. We also interviewed key informants in six states with various approaches to smoking in these settings. Informants were all highly experienced in working with mentally, physically or developmentally impaired adults and had many insights on systems and policy changes that could reduce the prevalence of smoking and secondhand smoke exposure in this population. Our session will describe obstacles adult foster care providers often face in implementing smoke-free policies (e.g., lack of trained staff, tobacco cessation services, and robust enforcement procedures; tobacco addiction among employees; and unintended consequences, such as e-cigarette use). We will also identify policy approaches that state and local authorities could consider to protect residents and employees from the adverse health impact of tobacco use and secondhand smoke exposure.

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POS4-160
THE IMPACT OF SMOKE-FREE POLICY IMPLEMENTATION IN PUBLIC HOUSING BUILDINGS
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There is a nationwide movement to implement smokefree policies in multunit housing. In government-subsidized housing, smoke-free policies could be a potent policy tool to decrease tobacco disparities as low-income individuals are more likely to smoke and be exposed to secondhand smoke (SHS). However, there is little information about how residents adapt their behaviors post-policy and what attitudes residents have toward the policy that may facilitate or impede implementation. In order to fill this gap, we conducted focus groups with residents of seven public housing highrise buildings in Minneapolis, Minnesota, that went smoke free in Summer, 2014. Focus groups were conducted with the same residents in Fall, 2014, and Spring, 2015, in order to examine both initial reactions and attitude changes over time. We conducted 13 focus groups at each time point, a total of 26 groups. At each time point, ten groups were conducted in English and three were conducted in Somali. We conducted separate groups for smokers and non-smokers. We also conducted interviews with building managers and social workers. Participants were recruited with presentations at building meetings and signs post-ed in buildings. Ninety-two of the original 112 participants (82%) were available for the follow-up groups. 51% of participants were current smokers and 17% were Somali-American immigrants. The mean age was 52 years and 54% were females. At both time points, many participants indicated a lack of understanding of the danger of second-hand smoke exposure and a concern that the policy was an infringement of their rights. Participants also mentioned unexpected consequences of the policy, including effects on interpersonal relationships among residents and with relatives and friends who visited. As would be expected, smokers reported significant barriers to compliance during the Minnesota winter, but some reported making quit attempts or decreasing cigarette use. Residents indicated the desire for the opportunity to provide more input about policy implementation and made specific suggestions about how the implementation of the policy could be improved.

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POS4-161
CONCURRENT CHILDHOOD SCREENING FOR LEAD AND TOBACCO SMOKE EXPOSURE AND WELL-CHILD VISITS
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There is an important need to increase identification of childhood tobacco smoke exposure (TSE) and help parents quit smoking. Screening for lead exposure in children provides a ready infrastructure for laboratory testing and treatment for TSE. We hypothesize that cotinine screening at one-year well-child visits will be an impetus to deliver effective tobacco treatment to parents. Prior work has shown the prevalence of TSE is high among children screened for lead exposure, parents find biomarker assessment of TSE acceptable, and pediatric office-based interventions promote parental tobacco cessation. To learn best methods to integrate cotinine screening into pediatric practice and leverage provider participation, we conducted key informant interviews with pediatric providers (physicians, nurse practitioners, nurses, n=28) in an inner city public teaching hospital pediatric clinic. The interviews were recorded and analyzed, and themes identified and summarized using standard qualitative methods. Provider practice was roughly split between routine assessment for child TSE or assessment contingent upon a history of asthma or other breathing problems. Providers were generally positive about cotinine screening, but only about half were willing to engage parents in cessation advice; the rest were interested in an independent referral system. Most providers thought a positive cotinine result merited a phone call from pediatric practice staff, but given provider time constraints, preferred it to be a nurse or someone else who could explain the result. Some providers wanted information about the health implications of specific cotinine levels before implementing screening. Most providers reported that a child’s history of wheezing or Emergency Department visits would increase urgency to provide parents with information and resources to protect their children. We conclude that providers find the idea of cotinine screening for TSE at well-child visits acceptable, but want more information about the variability of results and health implications of a positive screening result, as well as resources to support the additional responsibilities screening programs would create.

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POS4-162
POSITIVE AFFECT PREDICTS NEXT DAY SMOKING LAPSE AS DETERMINED BY ECOLOGICAL MOMENTARY ASSESSMENT
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Individuals attempting to quit smoking have poor success rates, and the vast majority fail to maintain long-term abstinence. Although a large body of evidence
documents the impact of negative affect on reducing abstinence, there is a much smaller body of research focused on the impact of positive affect (PA). Fredrickson’s broaden and build theory posits that increased PA is associated with resilience and better health outcomes, and some research has indeed suggested that higher levels of PA are associated with better cessation outcomes. The current study extends prior research by: 1) examining PA in real-time via ecological momentary assessment (EMA), and 2) determining whether discrete positive emotions are uniquely related to cessation. Participants were 244 smokers (52% female, Mage = 42.92 (SD = 11.52) who received nicotine replacement therapy and cessation counseling. EMAs were completed up to 4 times per day for 4 weeks after the quit day, and PA was assessed with 3 items (Enthusiastic, Happy, and Relaxed), rated on 5-point Likert scales. Analyses used the means and slopes of each emotion on the current day to prospectively predict lapse on the following day. Results (controlling for gender, age, partner status, education level, and race/ethnicity) indicated that: 1) higher means for PA (p=.014), and the specific emotions of Happy (p=.001) and Relaxed (p=.020), predicted lower likelihood of next-day lapse; and, 2) increasing linear slope for Happy (p=.040) predicted less likelihood of next-day lapse. When Happy and Relaxed items were entered together, only the mean (p=.032) and slope (p=.044) for Happy predicted lower next day lapse likelihood. Thus, happiness appeared most strongly related to a decreased likelihood of lapse and provided unique predictive utility over and above the other PA items. These are some of the first real-time, real-world data to demonstrate that distinct positive emotions, such as happiness, may serve as protective factors for smokers attempting to quit.

NEGATIVE AFFECT AND WITHDRAWAL ON AND AFTER QUIT DAY

Brown and Ryan (2003) suggested that mindfulness (or ‘Mindful Attention’) is “the presence or absence of attention to, and awareness of, what is occurring in the present moment.” Mindful attention is a malleable factor that is associated with greater overall well-being (Brown and Ryan, 2003), as well as decreased stress (Grossm, Niemann, Schmidt, & Walach, 2004), and lower rates of anxiety and depression (Hofmann, Sawyer, Witt, & Oh, 2010). Among smokers, greater mindfulness is associated with greater affective stability (Adams et al., 2014) and reduced cue-induced craving (Westbrook et al., 2013). While studies have shown that mindfulness is associated with other smoking-related factors such as reduced withdrawal symptoms using cross-sectional data (e.g., Vidrine et al., 2009), relatively little is known about the associations between baseline mindfulness and future abstinence-related affect/withdrawal. The current study sought to examine whether levels of mindful attention pre-cession predict negative affectivity and withdrawal on quit day as well as 3- and 7- days post-quit, during a smoking cessation treatment. Data from 58 adults (Mage=34.9; 65.5% male) participating in a larger smoking cessation trial were available for analysis. Self-report measures of mindful attention, negative affectivity, and withdrawal symptoms were collect-
ed. Dependent variables were assessed on quit day, as well as 3- and 7-days post-quit. Covariates included age, race, gender, and self-reported level of nicotine dependence. Greater mindful attention predicted lower negative affectivity at all three time-points as well as reduced withdrawal symptoms on quit day and 3-days post-quit. There was a trending effect for mindful attention predicting re-
duced withdrawal symptoms 7-days post-quit. The findings suggest that mindful attention may be an important factor to consider among smokers attempting to quit. Targeting mindful attention prior to or during smoking cessation treatment may help to reduce negative affect and withdrawal, which serve as barriers to cessation for many individuals.

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POS4-164
MECHANISMS UNDERLYING A MINDFULNESS-BASED ADDICTION TREATMENT FOR SMOKING CES

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Although mindfulness-based treatments show promise for smoking cessation, the underlying mechanisms are poorly understood. This study examined mechanisms underlying Mindfulness-Based Addiction Treatment (MBAT) vs. Usual Care (UC) and Cognitive-Behavioral Therapy (CBT) for smoking cessation. Adult smokers (N=412) were randomized to MBAT (n=154), CBT (n=155), or UC (n=103). Although overall abstinence rates did not differ by treatment, MBAT participants were more likely to recover abstinence after early lapses. Potential mechanisms are positive and negative affect, affective volatility, self-efficacy, withdrawal, dependence, and subjective bias toward cigarettes. First, mixed-effects regression models examined treatment effects on hypothesized mechanisms from quit date through 26 weeks post-quit, controlling for demographics, baseline smoking, and abstinence. MBAT participants reported lower anxiety, sadness, craving, concentration difficulties, dependence, subjective bias toward cigarettes, and higher self-efficacy for managing negative affect without smoking, compared to UC (p<.05). There were no differences between MBAT and CBT. Second, ANCOVAs examined treatment effects on affective volatility during treatment, controlling for demographics, baseline smoking, and abstinence. MBAT participants evidenced lower volatility of anger than those in UC (p=.005) and CBT (p=.015). Third, indirect effects of MBAT vs. UC on overall abstinence (entire sample) and lapse recovery (early lapsers) were examined, controlling for demographics and baseline smoking. Indirect effects were significant for anxiety, sadness, and self-efficacy in predicting 7-day abstinence at 4 weeks post-quit. In predicting 7-day abstinence at 26 weeks (both in the overall sample and in early lapsers), the indirect effect for dependence was significant. Whereas mechanisms underlying MBAT vs. CBT were largely similar, indirect effects of MBAT vs. UC occurred through lower anxiety, sadness, and dependence, as well as greater self-efficacy for managing negative affect. Future research may continue to examine in what ways (if any) mechanisms underlying mindfulness differ from other active treatments.

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Ci vediamo a Firenze!