Over recent decades the decline in smoking has been much slower in females than in males. Females are less successful than males at quitting: they have higher relapse rates, relapse more quickly, and have a poorer response to nicotine replacement therapies. The overall public health burden due to smoking is higher for women than men, especially given adverse consequences of maternal smoking both prenatally and during the early childhood years. This symposium will present an array of biobehavioral perspectives on mechanisms of sex differences in nicotine addiction with a view to understanding sex differences in smoking behavior and the implications for sex-based interventions and future research.

Chair: Cora Lee Wetherington, Ph.D. 1
Presenters: Sakire Pogun 2, Kenneth A. Perkins 3, Julie K. Staley 5, and Caryn Lerman 4
Discussants: Dorothy K. Hatusukami 6

1National Institute on Drug Abuse; 2Ege University Center for Brain Research; 3University of Pittsburgh; 4University of Pennsylvania; 5Yale University School of Medicine & VACHS; 6University of Minnesota

There are sex differences in brain structure and function and there is growing evidence that these differences impact vulnerability to addictive substances. Although drug abuse has been accepted to be a male problem, and research on addiction has been primarily conducted on male subjects, many studies on smoking behavior have included sex as a factor. While the gender-specific effects of environmental factors and social pressures on smoking behavior cannot be ignored, there is growing evidence that biological factors underlie the sexual dimorphism in the central effects of nicotine that may mediate addiction. Rodent studies point to significant sex differences in the genetics, metabolism and receptors of the nicotinic cholinergic system which result in differences in the rewarding and reinforcing effects of nicotine and are reflected in self-administration, locomotor activity, stress reactivity, consummatory behavior, body weight, and cognition. Similarly, there are sex differences between male and female smokers in the initiation, maintenance and cessation of the smoking habit. Biobehavioral studies including sex as a factor will help us understand nicotine addiction better and develop more efficient therapeutic strategies for smoking cessation. Recent research from our laboratory has shown that nicotine induces conditioned place preference (CPP) in male rats, but not in females. Estrogen may underlie this sex difference since blocking estrogen receptors reinstates CPP. Another recent finding involves individual differences in oral nicotine preference. Rats were given a free choice of nicotine or water starting at adolescence in either continuous (6 wks of nicotine choice starting at adolescence, 3 months interval, and another 6 wks of nicotine exposure as adults), or interrupted (nicotine choice available continuously from adolescence throughout adulthood) experimental design. Our results show that nicotine consumption is higher during adolescence than adulthood and that adult females consume more nicotine than males especially with interrupted design. The talk will include a brief summary of literature findings and recent findings from our laboratory.

Supported by grants from NATO, Scientific and Technical Research Council of Turkey (TUBITAK), Ege University Research Fund and Institutional funding.

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SRNT • Symposium

SYM1 SYM1A BIOBEHAVIOURAL STUDIES IN RODENTS POINT TO SEX DIFFERENCES IN THE CENTRAL EFFECTS OF NICOTINE

Sakire Pogun, Ph.D. 1, Gorkem Yararbas, M.D., Ph.D. 1,2, and Tanseli Nesil, M.Sc. 1,2, 1Ege University Center for Brain Research; 2Center for Drug R&D and Pharmacokinetic Applications; 3Biotechnology Dept. Institute of Science Ege University

There are sex differences in brain structure and function and there is growing evidence that these differences impact vulnerability to addictive substances. Although drug abuse has been accepted to be a male problem, and research on addiction has been primarily conducted on male subjects, many studies on smoking behavior have included sex as a factor. While the gender-specific effects of environmental factors and social pressures on smoking behavior cannot be ignored, there is growing evidence that biological factors underlie the sexual dimorphism in the central effects of nicotine that may mediate addiction. Rodent studies point to significant sex differences in the genetics, metabolism and receptors of the nicotinic cholinergic system which result in differences in the rewarding and reinforcing effects of nicotine and are reflected in self-administration, locomotor activity, stress reactivity, consummatory behavior, body weight, and cognition. Similarly, there are sex differences between male and female smokers in the initiation, maintenance and cessation of the smoking habit. Biobehavioral studies including sex as a factor will help us understand nicotine addiction better and develop more efficient therapeutic strategies for smoking cessation. Recent research from our laboratory has shown that nicotine induces conditioned place preference (CPP) in male rats, but not in females. Estrogen may underlie this sex difference since blocking estrogen receptors reinstates CPP. Another recent finding involves individual differences in oral nicotine preference. Rats were given a free choice of nicotine or water starting at adolescence in either continuous (6 wks of nicotine choice starting at adolescence, 3 months interval, and another 6 wks of nicotine exposure as adults), or interrupted (nicotine choice available continuously from adolescence throughout adulthood) experimental design. Our results show that nicotine consumption is higher during adolescence than adulthood and that adult females consume more nicotine than males especially with interrupted design. The talk will include a brief summary of literature findings and recent findings from our laboratory.

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SYM1B FACTORS INTERACTING WITH SEX TO INFLUENCE RESPONSES TO NICOTINE OR SMOKING

Kenneth A. Perkins, Ph.D. 1,2, Caryn Lerman, Ph.D. 3, Amy Grottenthaler, B.S. 1, Linda J. Kreitzel, B.S., Amy Mercincavage, B.S. 1, and Carolyn A. Force, R.N. 1, 1University of Pittsburgh; 2University of Pennsylvania

We have found that smoking reward and reinforcement in women, compared to men, tend to be influenced less by nicotine and more by nonpharmacological factors in smoking. This presentation will draw largely on studies from our laboratory to identify characteristics that may moderate acute responses to nicotine or smoking in women. We assessed responses in nonsmokers and in smokers to examine factors that may be involved in dependence onset and persistence, respectively. In nonsmokers, individual differences in nicotine sensitivity, but primarily in men and not in women. These include impulsivity, history of marijuana use, and DRD2 and DRD4 genotypes. Thus, few factors may alter nicotine responses in women prior to onset of dependence. In smokers, however, a variant in the DRD4 gene may enhance the increase in smoking reinforcement due to negative mood in women, but not in men. Clinically, raising quit motivation via monetary reinforcement of abstinence may increase, more in women than in men, the effectiveness of nicotine versus placebo patch over the first week of quitting. Use of such incentives may be important, as clinical trials show that women tend to gain less benefit than men from the nicotine patch. These results require replication and extension in larger samples, but they may help clarify sex differences in sensitivity to nicotine and smoking effects.

Supported by NIH Grants DA05807, DA12355, DA16483, and P50 CA084718.

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**SYM1**

**SEX DIFFERENCES IN THE NICOTINE-OPIOID SYSTEM INTERACTIONS**

Caryn Lerman, Ph.D.\(^1\), Riju Ray, M.B.S.S., Ph.D.\(^1\), Robert A. Schnoll, Ph.D.\(^1\), Kenneth A. Perkins, Ph.D.\(^1\), and Julie A. Blendy, Ph.D.\(^1\); University of Pennsylvania; \(^2\)University of Pittsburgh

Preclinical and clinical investigations support a role for the endogenous opioid system in nicotine reward. Additionally, there is evidence that estrogen modulates the nicotine addiction model. While there is evidence that nicotine antagonists appear to have greater effects on smoking behavior in female compared to male smokers. Human genetic studies have examined associations of a functional genetic variant in the MOR gene (OPRM1 Asp40) with smoking cessation. Data from two independent studies suggest that female carriers of the reduced function Asp40 allele of OPRM1 may have a greater ability to quit smoking. While evidence from the clinical studies is tentative and requires replication in larger studies, additional evidence for sex by OPRM1 interactions is provided in a human behavioral pharmacology study. Specifically, carriers of the OPRM1 Asp40 allele reported reduced nicotine reward; in a nicotine cigarette choice paradigm, there was a significant decline in beta2-nAChR availability over prolonged abstinence. This enhanced rate of receptor normalization may be associated with the higher incidence of subsyndromal depressive symptoms reported more commonly by women than men.

**Funding:** NIDA grants K02DA021863 and R01DA015577; Ethel F. Donahue Women's Health Investigator Program at Yale; and the Transdisciplinary Tobacco Research Center P50AA16532

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**SYM2**

**SMOKELESS TOBACCO FOR SMOKERS: SCIENCE AND FUTURE DIRECTIONS**

Chair: Dorothy Hatsukami, Ph.D.*

Presenters: Lois Biener, Ph.D.*\(^1\), Vaughn Rees, Ph.D.*\(^1\), and Rich O'Connor, Ph.D.*\(^1\)

*1University of Minnesota; 2University of Massachusetts; 3Harvard University; 4Roswell Park Cancer Institute; 5University of Nottingham

In the U.S., major cigarette companies have been acquiring smokeless tobacco companies, and manufacturing smokeless tobacco products or snus. The snus products are targeted towards the cigarette smoker as a method for dealing with smoke-free environments and may consequently undermine some smokers’ motivation for cessation. While the prevalence of smoking has been declining in the U.S., the smokeless tobacco market and use has been increasing. In spite of these trends, little research to date has been conducted on understanding the motives of the tobacco companies in introducing these novel smokeless tobacco products for the smoker, the consumer perception of these products, whether these products are preferred over medicinal nicotine and the effects of these products on cessation. Progress in these areas is necessary to circumvent any potential harm to public health. This symposium will present new research in these areas. Dr. Vaughn Rees will be presenting industry acquisition, sales, marketing and media data and toxicant analysis to determine the intent of current smokeless tobacco marketing efforts. Dr. Lois Biener will present data from a population survey that describes the receptivity of the population to snus products, how the consumer perceives them and predictors of snus uptake. Dr. Richard O’Connor will be presenting data from a trial that examines product choice behaviors across various nicotine containing products (e.g., medicinal nicotine, oral tobacco lozenge and snus), after receiving information about the harms of these products relative to cigarettes. Dr. Dorothy Hatsukami will describe her studies on toxicant uptake across various products and the results from her recent study examining the effects of snus products with relatively low and high nicotine levels versus medicinal nicotine on cessation. Dr. Ann McNeill, the discussant, will describe the implications from these studies and future directions.

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**SYM2A**

**IMPLICATIONS OF CIGARETTE MANUFACTURERS ENTRY INTO THE SMOKELESS TOBACCO MARKET**

Vaughn Rees, Ph.D.*\(^1\), and Greg Connolly, D.M.D., M.P.H., School of Public Health, Harvard University

Problem/Objective: Major US cigarette companies have recently moved into the smokeless tobacco (SLT) market, traditionally the purview of non-cigarette manufacturers. The top four US cigarette manufacturers each have produced new “reduced exposure” snus products, and Reynolds and Philip Morris have recently purchased major smokeless tobacco companies. Possible motivations may include preservation of market share by capitalizing on recent SLT market growth, promotion of combined SLT and cigarette use, and enhancement of public image and reduction of exposure to literature by offering potentially safer products.

Methods: Industry acquisition data, SLT and cigarette sales, marketing strategies and media reports were analyzed to assess cigarette companies’ intentions for promoting SLT products. Nicotine and nitrosamine analyses were conducted on Camel Snus (Reynolds), Taboka and Marlboro Snus (PM), and compared with popular moist snuff products to develop a basis for understanding their addictive and toxic potential.

Results: Industry and media sources indicated that increased market share and the public relations benefits of being associated with less harmful products are primary reasons for involvement in the SLT market. Low nicotine levels of PM snus products raise questions about maintenance of use without concurrent use of cigarettes.

Conclusions: Advertising and sales data indicate an expanding moist snuff market, providing a profit motive for cigarette company acquisitions. Aggressive marketing and low nicotine levels appear intended to promote combined snus and cigarette use, rather than encouraging smokers to switch to SLT to reduce harm. The results demonstrate the need for continued surveillance of the SLT market and emphasize the need for government regulation of SLT products.

**American Legacy Foundation, Grant #6212.**

**CORRESPONDING AUTHOR:** Vaughn Rees, Harvard University, Harvard School of Public Health, Division of Public Health Practice, 677 Huntington Avenue, Landmark Building, Level 3 East, Boston, MA 02115, USA; Email: vrees@hsph.harvard.edu
There is agreement in the public health community that low-nitrosamine smokeless tobacco is less harmful than cigarettes, but there is controversy about whether to disseminate information about the harm reduction potential of snus. Many feel that to do so would result in a net increase in harm to the population. Although there are strong feelings among professionals on each side of the question, there is virtually no evidence about the population response to the test marketing of the products. This paper provides such evidence by analyzing data from a telephone survey conducted in Indiana. Indica tion is that there is a lower level market for brands that are the only low-N tem products on the market for Philip Morris’s first snus product, Taboka (introduced in August 2006) and is also a test market for Camel Snus (as of March 2007) Questions about awareness and trial of the new products were included on the 2006 and 2007 Indiana Adult Tobacco Survey, a population-based survey of the Indiana population. Analyses of the 3544 respondents were conducted to assess the level of awareness and trial of the two products among various subgroups, perceptions of the harmfulness of smokeless tobacco relative to cigarettes, and factors that predicted awareness and trial of snus. Over 80% of respondents believed that smokeless tobacco was at least as harmful as cigarettes. Statewide, 20% of respondents had heard of one of the products but fewer than 2% had tried snus. There were major subgroup differences for both of these groups, with 60% of male smokers in Central Indiana (the county surrounding and including Indianapolis) reporting having tried Taboka or Camel Snus. Multivariate analyses indicated that awareness of either Taboka or Camel Snus was significantly higher among smokers in Central Indiana males who received promotional mailings and who perceived smokeless tobacco to be safer than cigarettes. These analyses demonstrate that direct mail marketing and perceptions of relative safety are important predictors of snus uptake.

This study was supported by the Indiana Tobacco Prevention and Cessation program (ITPPC) and by the National Cancer Institute’s Tobacco Research Initiative on State and Community Interventions (TRISCI); Grant # CA86257-0752.

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SYM2C

HOW DO SMOKERS REACT TO INFORMATION ABOUT AND TRIAL OF ORAL NICOTINE SOURCES?

Richard J. O’Connor, Ph.D.1,2, Kaila J. Norton, B.S.1, K. Michael Cummings, M.D.1,3,4, and Ron Biorand, Ph.D.1,3,4

Roswell Park Cancer Institute; “Cancer Council Victoria

Both pharmaceuticals and tobacco products have been introduced into the market that deliver nicotine orally and are marketed to smokers as temporary substitutes for, cessation aids, or smoking alternatives. However, the extent of offering smokers not currently interested in quitting (N=27) the opportunity to try various oral nicotine products (Commit 4mg Lozenge, Stonewall Hard Snuff, Camel Snus, Marboro Snus), after providing credible information about harms relative to cigarettes. At first, participants were provided one container of each product to sample over one week. Then, participants could elect to use one of those products in addition to or instead of cigarettes for one week. Participants showed significant reaction to the relative risk information. At baseline 15% believed smokeless tobacco and 42% believed medicinal nicotine were less harmful than cigarettes; both increased to 67% one week later. When participants sampled products, Commit was most frequently nominated the most liked product (55%), while Camel Snus was most commonly nominated as least liked (45%). After the sampling phase, most participants (63%) chose Commit to use for one week while 5% declined to continue use of any products. Substitution did not occur on a large scale — on average, smokers used .125 units of their preferred product except for tobacco cigarettes, which increased per day (i.e., for every 8 cigarettes smoked, 1 oral product was used). Consumption of the preferred product decreased during the week, although cigarette smokers also tended to decrease over the week. Participants showed a significant, significant decrease in total CO after the one week trial (19.5ppm vs. 16.4ppm, p<.01). The majority of smokers reported interest in future use of their preferred product, generally to aid in reducing or eliminating cigarette smoking per day — 68% reported they would be very likely or somewhat likely to use preferred product instead of or in addition to cigarettes. Providing credible relative risk information corrects misperceptions of tobacco product harms, at least in the short term. Implications of these findings for tobacco harm reduction will be discussed.

Roswell Park Transdisciplinary Tobacco Use Research Center (via National Cancer Institute CA111236). All products were purchased on the open market.

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SYM2D

SMOKELESS TOBACCO PRODUCTS: TOXICITY, TOXICANT EXPOSURE AND SMOKING CESSATION TOOL

Dorothy K. Hatsukami, Ph.D.1, Louise Hertsgaard, Irina Stepanov, Joni A. Jensen, M.P.H., and Stephen S. Hecht, Ph.D., University of Minnesota

The public health community has engaged in a debate of whether smokers should use lower-tobacco-specific nitrosamine (TSNA) smokeless tobacco products as a way to quit smoking among those who have been previously unsuccessful in quitting. Concurrently, tobacco companies have been marketing smokeless tobacco products that have been aimed at the cigarette smoker. Few studies have been conducted that examine the toxicity and nicotine yields of these products, the uptake of toxicants across different tobacco products and the effectiveness of using these products to help smokers who want to quit. To date, our research has demonstrated the lower TSNA smokeless tobacco products with varying levels of nicotine vs. medicinal nicotine. Smokers interested in quitting were randomized to either: 1) Camel Snus (low TSNA, moderate nicotine; n=46); 2) Taboka (low TSNA, low nicotine, n=48); and 3) 4 mg nicotine lozenge (n=54). Subjects underwent a 1-week sampling period of the different products to which they were assigned. They were then asked to use the assigned product of the flavor of their choice for 4 weeks. After the end of the 4 weeks, they were asked to abstain from all tobacco products. The rate of dropouts was high across all conditions (37%-41%) To date, the rate of abstinence at 12 weeks post-treatment has been: Camel Snus 23.9%; Taboka 19.6%; nicotine lozenge 29.2%. These results suggest that medicinal nicotine does just as well as an oral tobacco with higher and lower levels of nicotine.

This study was funded by the University of Minnesota TTURC DA13333. All products were purchased at retail stores.

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SYM2E

TOBACCO USE, CESSATION, AND RELAPSE IN CANCER PATIENTS

Chair: Vani Nath Simmons, Ph.D.1

Presenters: Sonia A. Duffy, Ph.D., R.N.1,2, Jamie Ostroff, Ph.D.,2 and Michelle Cororve Fingeret, Ph.D.1

Discussant: Ellen Gritz, Ph.D.,3,4

1Moffitt Cancer Center; 2University of Michigan & Veterans Affairs Center for Clinical Management Research; 3Memorial Sloan-Kettering; 4University of Texas M.D. Anderson Cancer Center

The relationship between smoking and cancer is well established. Cigarette smoking accounts for 85% of head and neck cancers and 90% of lung cancer cases. In addition, the evidence that smoking causes cancer, continued smoking after an individual has been diagnosed with cancer is related to a myriad of detrimental health effects (e.g., risk of developing a second primary cancer or other smoking related diseases). Research suggests that cancer patients are highly motivated to quit smoking; thus efforts aimed at increasing tobacco cessation and maintaining smoking abstinence among this population could have a significant public health impact. The goal of this symposium is to present new findings with the cancer patient population that further elucidates the critical need for effective smoking interventions and suggests unique targets and forms of cessation and relapse interventions for cancer patients. Dr. Donna Duffy will present recent data from a large (N = 811) longitudinal study with head and neck cancer patients examining the impact of smoking on medical outcomes and quality of life. She will also discuss novel findings regarding the interrelationship between smoking and other co-occurring health behaviors to inform outcomes. Dr. Michelle Cororve Fingeret will present work examining the relationship between smoking and body image among surgically treated oral cancer patients. She will describe data on the varied patterns of body image concerns for smokers vs. non-smokers as a potentially important consideration in developing future smoking cessation treatments with oral cancer patients. Dr. Jamie Ostroff will present outcome data from a pre-surgical, randomized, smoking cessation trial with newly diagnosed cancer patients comparing enhanced usual care (EUC) and Brief Reduced Smoking. Dr. Vani Simmons will present qualitative and quantitative data from a study on smoking relapse among lung cancer and head/neck cancer patients including patient and provider perspectives on smoking relapse and rates and predictors of smoking relapse post-surgery. Dr. Ellen Gritz, a leading expert on smoking cessation in cancer patients, will serve as the discussant.

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SYM3A  SHORT-TERM EFFECT OF A PRE-SURGICAL SMOKING CESSATION INTERVENTION FOR NEWLY DIAGNOSED CANCER PATIENTS

Jamie Ostroff, Ph.D.*,1, Jake Burkhalter, Ph.D.*,1, Yuelin Li, Ph.D.*,2, Mariya Shylko, M.A.*,1, Susan Holland, M.P.H.*,1, and Paul Cinciripini, Ph.D.*,1;1Memorial Sloan-Kettering Cancer Center; 1M.D. Anderson Cancer Center

Smoking cessation reduces the risk of peri-operative complications, disease progression and second primary malignancies in tobacco dependent cancer patients. Given high rates of smoking relapse post-treatment, development and evaluation of acceptable and efficacious interventions is needed for this special population. Eligible smokers newly diagnosed with mixed cancers (n = 185) scheduled for surgery were randomized to either enhanced usual care (EUC: physician advice, behavioral counseling, NRT), or EUC+SRS (Scheduled Reduced Smoking). Although Smoking) delivered by a handheld computer (PDA). Smokers in the EUC+SRS condition chose a pre-surgery quit date. The PDA used an algorithm to taper the number of cigarettes smoked up to hospitalization, prompted smokers to smoke on the prescribed schedule, and assessed psychosocial variables in real time. Trial acceptance was high (87%). Biochemically verified point abstinence was assessed at hospitalization and 3 and 6 months following hospitalization. Participants were 53% female (mean age 58 years). The median baseline smoking rate was 20 cpd, and 36% reported heavy nicotine dependence. Randomization ensured that the two groups had comparable baseline characteristics in sociodemographic, psychosocial, and medical variables. Retention of patients in the trial was high, with 92% retention at hospitalization and 79% retention at 3-month follow-up. Smoking cessation outcomes at the earliest time point, hospitalization, were 50% for SRS patients (n=96) and 56.7% for EUC (n = 89) (p = 0.38, n.s. by Fisher's exact test). Both patients and caregivers perceived smoking cessation rates of smoking relapse. Clinical implications and future directions will be discussed.

Supported by NCI grants R01CA095014 and T32CA098461.

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SYM3B  BODY IMAGE CONCERNS AMONG SURGICALLY TREATED ORAL CANCER PATIENTS: A POTENTIAL TARGET FOR SMOKING CESSATION TREATMENT

Michelle Corcorne Fingeret, Ph.D.*,1, Gregory Reece, M.D.*,1, Ann Gillenwater, M.D.*,1, Yisheng Li, Ph.D.*,1, Shana Palla, M.S.*,1, and Ellen Gritz, Ph.D.*,1;1University of Texas M.D. Anderson Cancer Center

Knowledge of the relationship between smoking and body image in patients with oral cancer is needed for the pre-post surgical smoking cessation treatment in this population, which can ultimately prolong survival, enhance quality of life, and reduce the risk of secondary primary tumors. To the extent that body image contributes to smoking behaviors, patients with oral cancer who continue to smoke may benefit from interventions that are specifically targeted to treat body image disturbance. Although body image issues involving post-cessation weight gain have been implicated as deterrents to smoking cessation in the general population, the nature of appearance concerns among patients with oral cancer are likely to extend well beyond body shape and size and involve aspects of outward physical appearance related to disease site and treatment outcome. Patients with oral cancer who continue to smoke postoperatively are particularly vulnerable to experiencing facial disfigurement as smoking is known to increase the risk of wound infection and wound healing. The purpose of this study was to obtain much needed information about the nature and extent of body image concerns among surgically treated oral cancer patients and to evaluate the relationship between smoking and body image in this patient group. Participants (N=75) completed self-report questionnaires and a breath carbon monoxide test prior to surgical intervention, 1 month and 6 months following surgical intervention. At baseline, significantly higher body image concerns were found for current smokers compared to non-smokers on two separate instruments. Generalized linear models with repeated measures indicated that the pattern of body image scores over time varied significantly between smoking status groups. Current smokers had a more consistent increase in body image concerns over time while non-smokers showed increases sharply at 1 month but decreased slightly after 6 months. These findings indicate that body image concerns are associated with smoking behaviors in oral cancer patients, and are a potential target for treatment to assist with smoking cessation throughout the active phase of cancer treatment.

Work supported, in part, by a postdoctoral fellowship from the M.D. Anderson Education Program in Cancer Prevention grant R25-CA55730 from the National Cancer Institute.

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SYM3C  THE INTERRELATIONSHIP BETWEEN SMOKING, OTHER HEALTH BEHAVIORS, BIOMARKERS AND OUTCOMES AMONG HEAD AND NECK CANCER PATIENTS

Sonja A. Duffy, Ph.D., R.N.*,1,2, Jeffrey E. Terrell, M.D.,2, David L. Ronis, Ph.D.,2,3, Bruce G. Gruber, M.D.,2,4, Jerry M. Koran, M.D.,2,4, Gregory T. Wolf, M.D.,2,4, Mutamaz Khan, M.D.,4, Scott McLean, M.D.,4, and Karen E. Fowler, M.P.H.*;1,2,4;1University of Michigan; 2Veterans Affairs Research Center for Clinical Management Research; 3Henry Ford Health System

Prior studies have provided varied information about the association between health behaviors (particularly smoking), biomarkers and outcomes among head and neck cancer patients. However, none of the studies have prospectively assessed the nature, relative strength, and interrelationships of these factors together as predictors of recurrence, survival, and quality of life. Hence, the specific aim of this study is to determine if smoking, other health behaviors (alcohol use, nutrition, physical activity, and sleep), clinical characteristics, and molecular markers interleukin-6 (IL-6) and human papillomavirus-16 (HPV-16) are major predictors of recurrence, survival, and quality of life. Interventions to improve head and neck cancer patients. This was an observational, longitudinal study that enrolled patients (N=811) from three hospitals. Information on health behaviors, clinical characteristics, and demographics were collected through surveys and hospital records. Serum was collected every 3 months and tumor tissue was collected at time of initial tumor biopsy or tumor resection. Smoking and problem drinking were highly associated (p<0.01) and both were associated with lower body mass index (BMI) (p<0.01). Moreover, physical activity and sleep were inversely associated with smoking (p<0.01). Low sleep scores were common and highly associated with depression (p<0.01) and smoking (p<0.01). Baseline smoking was the strongest predictor of survival in this population with both current and former smokers having 2.5 times the hazard of death compared to never smokers (p<0.01). Smoking was associated with IL-6 (p<0.01) and IL-6 is a predictor of poor survival (p<0.01). However, smoking status was inversely associated with HPV-16 positive tumors (p<0.01). The most consistent factors across years 1 were smoking status and body mass index (BMI) (p<0.05). These data suggest that smoking and other health behaviors are interrelated and are associated with prognostic biomarkers and cancer recurrence, survival and quality of life. Interventions to improve health behaviors, particularly smoking, may improve outcomes among head and neck cancer patients.

This study was supported by the National Institutes of Health through the University of Michigan Head and Neck SPORE grant P50 CA72484.

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SYM3D  SMOKING RELAPSE AMONG LUNG CANCER AND HEAD AND NECK CANCER PATIENTS: QUALITATIVE AND QUANTITATIVE FINDINGS

Vani Nath Simmons, Ph.D.*,1, Erika B. Litvin, M.A.,2, Riddhi Patel, B.S.,2 Paul B. Jacobsen, Ph.D.,1 Judith McCaffrey, M.D.,1 Gerold Bepler, M.D., Ph.D.,1 and Thomas H. Brandon, Ph.D., Moffitt Cancer Center and University of South Florida

Continued smoking among cancer patients is related to adverse health outcomes, including a reduction in treatment efficacy and poorer overall survival. Many patients will quit smoking after diagnosis, offering a unique window of opportunity to provide a relapse-prevention intervention. However, there is little information regarding relapse in this population, and no relapse interventions tailored to cancer patients have been developed. The goal of this study is to acquire knowledge needed to develop a smoking relapse intervention for cancer patients. The aim of Phase I was to identify patient and provider perspectives on smoking cessation and relapse and to elicit preferences for intervention content and modality. We interviewed 20 lung and head/neck cancer patients who had made a quit attempt since their diagnosis and 11 providers who work directly with patients. Transcripts were coded for key themes. The general theme that emerged was that stress and fear associated with diagnosis provided strong motivation to quit. Patients reported similar relapse triggers found in studies using general population samples, however protective factors unique to this population included fear of cancer recurrence and feeling sick or in pain. Patients and providers suggested that interventions should include information about the benefits of quitting and the risks of continued smoking specific to cancer patients, and cessation treatments. These qualitative findings are being further examined in Phase II, an ongoing, longitudinal, qualitative study examining patient, caregiver, and physical predictors of relapse in lung and head/neck cancer patients. Follow-up data is collected at 2, 4, and 12 months post-surgery. Preliminary results regarding the precipitating events and predictors of relapse will be presented. Five common relapse risk factors (e.g., negative affect, motivation), as well as cancer specific risk factors (e.g., pain, fear of recurrence, fatigue), will be examined. Findings will guide the development of a future smoking relapse intervention for cancer patients.

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SYM4
THE NEXT GENERATION OF INVESTIGATORS: NOVEL APPROACHES TO AN OLD PROBLEM

Chair: Robert E. Sorge*1
Presenters: Sean P. Barrett1, Anne-Noël Samaha1, Paul J. Kenny2, Matthew I. Palmeriat1, and Darlene H. Brunzell2
Discussant: Robert E. Sorge1

McGill University; Dalhousie University; University of Montreal; Scripps Institute; Kansas State University; Virginia Commonwealth University

Smoking is a highly pervasive addiction in society, but there is still much to learn about the mechanisms through which nicotine contributes to smoking addiction. This symposium will be presented by emerging young investigators whose work is starting to have an impact on thinking about how nicotine contributes to tobacco addiction. The speakers will offer new findings about the rewarding effects of nicotine and will present evidence concerning a role for nicotine and nicotinic receptors in motivation. Sean Barrett (Dalhousie University) will begin by discussing the role of nicotinic factors in the self-administration and subjective effects of cigarettes in human smokers. Dr. Anna-Noël Samaha (University of Montreal) will describe how the speed of nicotine delivery is critical to the development of behavioural sensitisation to nicotine in animals, and also to the neurochemical effects of these infusions. Paul Kenny (Scripps Institute) will then present data regarding the nature of opiate transmission within the insula of the rat brain and the possible ways in which disruption of the opiate system could affect the rewarding effects of nicotine. Matthew Palmeriat (Kansas State University) will begin the next component of this symposium by presenting new data suggesting that nicotine increases the motivation to obtain sucrose without altering sucrose palatability in rats. Darlene Brunzell (Virginia Commonwealth University) will then speak on the contributions of the nicotinic receptor subunit to an addiction phenotype. Finally, the discussant, Robert Sorge (McGill University), will briefly summarise research questions addressed and lead a discussion about the questions to be addressed in the future.

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SYM4A
THE EFFECTS OF NICOTINE PHARMACOLOGY VS. NICOTINE EXPECTANCY ON TOBACCO-RELATED REINFORCEMENT

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One factor that has confounded previous investigations into the reinforcing effects of nicotine in humans is that a lack of adequate blinding has often made it difficult to distinguish between the actual pharmacological effects of nicotine and placebo effects associated with the belief that one has received nicotine. The current study examined the respective roles of nicotine pharmacology and expectancy on behavioural (i.e., self-administration) and subjective (i.e., incentive motivation and withdrawal) effects measured by the Questionnaire of Smoking Urges-Brief indices of tobacco-related reinforcement, using a mixed within-between-subjects design. 52 adult smokers (28 male; 24 female) completed two laboratory sessions in which they were required to sample three puffs of a cigarette and then permitted to earn additional puffs using a progressive ratio task. Participants were randomly assigned to receive either nicotine-containing (Quest 1) or denicotinized (Quest 3) cigarettes during both sessions but were led to believe they received nicotine-containing cigarettes during one session and denicotinized cigarettes during the other. Participants self-administered more cigarette puffs when told the cigarettes contained nicotine than when told the cigarettes contained no nicotine (p=0.017), while the actual nicotine content of the cigarettes did not affect self-administration. Findings suggest that both pharmacological and psychological factors influence the reinforcing effects of smoking, but pharmacological effects of nicotine do not appear to be critical for either incentive motivation or self-administration. These results question the hypothesis that tobacco-related reinforcement can be solely attributed to the reinforcing effects of nicotine per se.

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SYM4B
RAPID DELIVERY OF NICOTINE PROMOTES PSYCHOMOTOR SENSITIZATION AND ALTERS ITS NEUROBIOLOGICAL IMPACT

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1Department of Pharmacology, University of Montreal, Montreal, Quebec, Canada; 2Department of Psychology and Neuroscience, The University of Michigan, Ann Arbor, MI, USA

Nicotine is highly addictive when it is inhaled in tobacco smoke but much less addictive when it is delivered orally or through the skin. This is thought to involve the more rapid delivery of nicotine to the brain when it is smoked. However, it is not known why rapidly delivered nicotine might be more addictive. The development of addiction is thought to involve the ability of drugs to produce sensitization-related changes in the mesocorticolimbic system. One behavioural manifestation of these changes is psychomotor sensitization. We hypothesized, therefore, that the rapid delivery of nicotine might promote psychomotor sensitization. We found that rats treated with rapid intravenous injections of nicotine (delivered over 5 vs. 25-100 s) were more likely to develop psychomotor sensitization. We then examined the cells engaged by nicotine as a function of the speed of injection using c-fos and arc mRNA markers and found that this effect was specific to mesocorticolimbic regions (e.g., the caudate-putamen, nucleus accumbens shell and medial prefrontal cortex). The rate of nicotine delivery also influenced changes in gene regulation with repeated exposure to the drug. In the caudate-putamen, repeated exposure to rapid nicotine injections decreased the c-fos and arc response to a subsequent nicotine injection. In contrast, repeated exposure to slower nicotine injections either enhanced (in the case of c-fos) or did not affect (in the case of arc) drug-induced gene expression. Thus, rapidly administered nicotine increases susceptibility to sensitization and more readily engages the mesocorticolimbic system. We propose that rapidly administered nicotine might be more addictive because it more readily induces the changes in the brain that lead to addiction. As such, by rapidly delivering nicotine to the brain, the nicotine delivery system itself (i.e., cigarettes) might contribute to making cigarette smoking one of the hardest addictions to break.

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SYM4C
INSULAR OREXIN (HYPOCRETIN) TRANSMISSION REGULATES NICOTINE REWARD

Paul J. Kenny, Laboratory of Behavioral and Molecular Neuroscience, Department of Molecular Therapeutics, The Scripps Research Institute

Damage to the insular cortex can profoundly disrupt tobacco addiction in human smokers, reflected in spontaneous tobacco abstinence and persistently decreased urge to smoke. Little is known concerning the neurobiological mechanisms through which the insula may control the maintenance of the tobacco habit. Emerging evidence suggests that orexin (hypocretin) transmission may play an important role in drug reinforcement processes, but its role in the rewarding actions of nicotine, considered the key addictive component of tobacco smoke, remains largely unexplored. Here I will present data demonstrating that blockade of orexin transmission at orexin-1 (OX1; hypocretin-1) receptors decreases intravenous nicotine self-administration in rats tested under fixed and progressive ratio schedules of reinforcement. Blockade of OX1 receptors also abolished the stimulatory effects of nicotine on brain reward circuits, as measured by reversal of nicotine-induced lowering of intracranial self-maintenance (ICSS) thresholds in rats. In addition, I will show data highlighting the innervation by orexin-containing fibers into the insula, and show that OX1 receptors are located on insular cells. Furthermore, I will also show that blockade of OX1 receptors in the insula but not in the adjacent somatosensory cortex decreases nicotine self-administration in rats. These data support the hypothesis that insular orexin transmission plays a permissive role in the motivational properties of nicotine, and therefore may be a key neurobiological substrate necessary for maintaining tobacco addiction in human smokers.

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SYM3

SOMATIC SENSATION AS A MECHANISM FOR THE EFFECTS OF NICOTINE ON BEHAVIOR IN A PAINFUL SETTING

Matthew I. Palmatier, Laura Dare, Melanie J. Hall, and Devi Bluvan, Department of Psychology, Kansas State University

Recent studies have demonstrated that nicotine (NIC) can increase operant behaviors that lead to the delivery of other non-drug reinforcers. This latter effect of NIC has been established with unconditioned or intrinsically reinforcing visual stimuli (i.e., “sensory” reinforcers) and visual/auditory stimuli that have acquired value as the result of pairing with primary rewards (i.e., conditioned reinforcers). However, the hedonic properties of these stimuli cannot be directly measured. The present study investigates whether NIC could increase the motivation to obtain a reinforcer (sensory solution) and whether this increased motivation reflected an increase in the hedonic properties of the reward. Naive rats were shaped to respond for 30 (64) sucrose under a progressively increasing ratio (PR) schedule of reinforcement. Breaking points (BPs) were operationally defined as the final ratio completed before a 20 min period in which no reward were earned. Once stable BPs were established, rats were randomly assigned to one of two groups (NIC (0.4 mg/kg base) or SAL (4 ml/kg)) with a new group of rats (NIC). To each BP solution 15 min before all subsequent testing sessions. NIC increased BPs for 30% sucrose, but did not alter responding on a separate, inactive lever. Stable BPs were then established for the following concentrations of sucrose: 60, 30, 20, 10, 5, 2.5, and 0%. For both groups, BPs increased with sucrose concentration. NIC increased BPs for all concentrations, including water (0%). In follow-up tests NIC and SAL rats were given 20-min of free access to 0, 1.25, 2.5, 5, 10, 30, and 60% sucrose in the operant conditioning chambers. Sucrose intake followed an inverted U-shape; intake was highest from 2.5-10% and NIC pre-treatment decreased intake at these concentrations. All rats were then instrumented with intra-oral flowmeters and tested for reactivity to 0, 1.25, 2.5, 5, 10, and 30% sucrose. Pre-treatment with NIC did not alter the frequency of digestive or absorptive responses to any solution. These preliminary findings suggest that the reinforcing enhancement effects of NIC are not based on increased valence of the primary reinforcer.

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SYM4

NICOTINE SUBUNIT CONTRIBUTIONS TO ADDICTION PHENOTYPE

Darlene H. Brunzell, Ph.D.*, Elizabeth S. Hendrick, M.S.*, Patrick M. Beardsley, Ph.D.* and Michael McIntosh, Ph.D.*, Virginia Commonwealth University, Richmond, Virginia; *University of Utah, Salt Lake City, Utah

The beta 2 nicotinic acetylcholine receptors (beta2*αnACHRs; * denotes assembly with other subunits) are critical for nicotine self-administration, nicotine conditioned place preference, and acquisition of sensitizing properties to nicotine. These receptors are highly expressed in catecholaminergic nuclei and have high affinities for nicotine. The more ubiquitously expressed alpha4beta2*αnACHRs are chiefly insensitive to nicotine antagonism. Preliminary studies determined whether infusion of MII into the nucleus accum-bens shell (NAC) of Long Evans rats dose-dependently blocks progressive ratio (PR) responding for nicotine plus light/tone cues. Rats were trained under an FR 1 schedule of reinforcement with 20-s timeout; responding on an active lever resulted in delivery of 0.03 mg/kg nicotine plus light/tone cues (NIC). To each group was assigned solution 15 min before all subsequent testing sessions. NIC increased BPs for 30% sucrose, but did not alter responding on a separate, inactive lever. Stable BPs were then established for the following concentrations of sucrose: 60, 30, 20, 10, 5, 2.5, and 0%. For both groups, BPs increased with sucrose concentration. NIC increased BPs for all concentrations, including water (0%). In follow-up tests NIC and SAL rats were given 20-min of free access to 0, 1.25, 2.5, 5, 10, 30, and 60% sucrose in the operant conditioning chambers. Sucrose intake followed an inverted U-shape; intake was highest from 2.5-10% and NIC pre-treatment decreased intake at these concentrations. All rats were then instrumented with intra-oral flowmeters and tested for reactivity to 0, 1.25, 2.5, 5, 10, and 30% sucrose. Pre-treatment with NIC did not alter the frequency of digestive or absorptive responses to any solution. These preliminary findings suggest that the reinforcing enhancement effects of NIC are not based on increased valence of the primary reinforcer.

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SYM5

SMOKERS WITH SERIOUS MENTAL ILLNESS: A FOCUS ON MECHANISMS AND MODELS

Chair: Jennifer W. Tidy, Ph.D.*

Presenters: Jennifer W. Tidy, Ph.D.*, Jill M. Williams, M.D.*, Andrea H. Weinberger, Ph.D.*, and A. Eden Evins, M.D.*

Discussant: Saul Shiffman Ph.D.**

Brown University-Alpert Medical School; *UMDNJ-Robert Wood Johnson Medical School; **Yale University School of Medicine; *Harvard Medical School; **University of Pittsburgh

Rates of smoking in people with serious mental illness (SMI) are two to three times higher than smoking rates in the general population. Smoking treatments are less effective for smokers with SMI than for non-psychiatric smokers, even among those who are motivated to stop smoking and who enroll in combined pharmacological and psychosocial treatment programs. The overarching viewpoint of this symposium is that a better understanding of the unique biological and environmental mechanisms that contribute to smoking in people with SMI is critical and necessary for the development of effective treatments for smokers with SMI. Hypotheses concerning the high smoking rates in smokers with SMI focus on the idea that smoking improves psychiatric symptoms and improves cognitive dysfunction or that nicotine may have endogenous analgesic or anti-inflammatory properties that are beneficial for smokers with SMI. This symposium will highlight findings from novel studies that investigate these hypotheses by comparing, under controlled behavioral laboratory conditions, the effects of biological and environmental variables in people with and without SMI. The symposium chair will provide a brief overview of the elevated smoking rates and treatment results in people with SMI. Dr. Williams will present results of a comparison of smoking topography and nicotine intake in smokers with bipolar disorder, smokers with schizophrenia and those with no psychiatric illness. Dr. Weinberger will discuss subjective responses to smoking cues in smokers with and without a history of major depressive disorder. Dr. Tidy will compare the effects of high-dose nicotine replacement and sensorimotor smoking replacement in smokers with schizophrenia and those without psychiatric illness. Dr. Evins will compare nicotine’s effects on reward responsiveness and cognitive performance in non-smokers with and without schizophrenia. Finally, Dr. Shiffman will discuss the implications of these findings for the development of novel, effective smoking treatments for smokers with serious mental illness.

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The prevalence of smoking for adults with major depression is much higher than the general population. In addition, smokers with a history of depression appear to have more difficulty with smoking cessation and require more attempts to quit. Little is known about the specific ways that smokers with depression differ from other smokers. Gaining a better understanding of differences between these groups of smokers will aid the creation of novel interventions and tailoring of current treatments to be more efficacious with this difficult-to-treat population. Reactivity to smoking cues may be one useful way to examine differences between smokers with and without depression. Previous studies have examined the cue reactivity in smokers with schizophrenia, but not smokers with depression. The purpose of this pilot study was to examine differences in cravings and affect elicited by smoking-related cues in smokers with and without a history of major depressive disorder (MDD). Participants were nicotine dependent smokers with either no history of MDD (MDD-; n=23) or a history of MDD and no current treatment (MDD+Tx; n=12). Participants completed two cue reactivity sessions: the first reactivity session was conducted with an empty room; the second reactivity session was conducted after smoking deprivation. Smoking groups were similar on baseline smoking and nicotine dependence while MDD+Tx reported higher symptoms of depression and cognitive impulsivity. Cue-induced cravings for cigarettes increased for all smokers suggesting that smokers with depression responded similarly to smokers without depression to smoking cues. Negative and positive affect during the cue reactivity sessions differed based on history of depression and smokers with a history of depression showed a greater increase in negative affect and a greater decrease in positive affect during the cue reactivity session compared to smokers without depression. These differences were observed in the empty room and after smoking deprivation.

In conclusion, a single dose of transdermal nicotine enhanced response to non-drug-related rewards in the environment, and improved attention and memory performance in both groups and was associated with greater improvements in inhibition of impulsive responses and novelty detection in non-smokers with schizophrenia compared with controls. These effects may contribute to reinforcement of early smoking behavior and development of nicotine dependence in patients and controls. Nicotinic agonists may prove to be particularly effective nicotine dependence treatments for those with schizophrenia if they are shown to have a lasting effect to ameliorate some attention and memory deficits associated with the disorder.

This work was supported by grants from the Stanley Medical Research Institute and the National Institute on Drug Abuse to A. Eden Evins.

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SYM5C SENSORMOTOR AND NICOTINE REPLACEMENT IN SMOKERS WITH AND WITHOUT SCHIZOPHRENIA

Jennifer W. Tidey, Ph.D.,1 Damaris J. Roheenson, Ph.D.,2,3 Gary B. Kaplan, M.D.,2 and Robert M. Swift, M.D.,1,2 Center for Alcohol and Addiction Studies, Brown University; Providence VA Medical Center; VA Boston Healthcare System/Boston University School of Medicine

Smoking rates are very high, and cessation rates are extremely low in smokers with schizophrenia (SZ). Nicotine replacement appears to be less effective at reducing smoking urges and smoking behavior in SWS compared to equally heavy smokers without schizophrenia, suggesting that alternative or complementary strategies may be needed to reduce their smoking. In this laboratory study we are investigating whether sensorimotor replacement for smoking will boost the effects of nicotine replacement for reducing smoking urges, withdrawal symptoms and smoking behavior in SWS. Smokers with schizophrenia (current n=24; 68% male; M=30.7 cigarettes per day) and equally heavy smokers without psychiatric illness (CON; n=14, 70% male, M=25.4 cigarettes per day) undergo laboratory sessions in which they receive transdermal nicotine replacement (42 mg or placebo) alone or in combination with sensorimotor replacement for smoking (denticocinated cigarettes or no cigarettes). Outcome measures include smoking urge, nicotine hour of smoking deprivation. Smoking groups were similar on baseline smoking and nicotine dependence while MDD+Tx reported higher symptoms of depression and cognitive impulsivity. Cue-induced cravings for cigarettes increased for all smokers suggesting that smokers with depression responded similarly to smokers without depression to smoking cues. Negative and positive affect during the cue reactivity sessions differed based on history of depression and smokers with a history of depression showed a greater increase in negative affect and a greater decrease in positive affect during the cue reactivity session compared to smokers without depression. These differences were observed in the empty room and after smoking deprivation.

In conclusion, a single dose of transdermal nicotine enhanced response to non-drug-related rewards in the environment, and improved attention and memory performance in both groups and was associated with greater improvements in inhibition of impulsive responses and novelty detection in non-smokers with schizophrenia compared with controls. These effects may contribute to reinforcement of early smoking behavior and development of nicotine dependence in patients and controls. Nicotinic agonists may prove to be particularly effective nicotine dependence treatments for those with schizophrenia if they are shown to have a lasting effect to ameliorate some attention and memory deficits associated with the disorder.

This work was supported by grants from the Stanley Medical Research Institute and the National Institute on Drug Abuse to A. Eden Evins.

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SYM5D EFFECTS OF NICOTINE ON REWARD RESPONSIVENESS AND COGNITIVE PERFORMANCE IN NON-SMOKERS WITH AND WITHOUT SCHIZOPHRENIA

Ruth S. Barr, M.D.,1 Melissa Cuhiane, M.P.H.,1 Lindsay Jubelb,2 and A. Eden Evins, M.D.,2,3,4 Queens University, Belfast, Northern Ireland, UK; 1Massachusetts General Hospital, Boston, MA; 2Harvard Medical School

Background: Tobacco smoking, driven by the addictive properties of nicotine, is the most prevalent preventable cause of death in the Western World. Accumulated evidence suggests that nicotine may increase appetitive responding for non-drug incentives in the environment and may improve cognitive performance, particularly in those with psychiatric disorders such as schizophrenia for which the prevalence of tobacco use is especially high.

To test this hypothesis, we conducted a randomized, double-blind, placebo-controlled, crossover study of the effect of a single dose of transdermal nicotine on reward responsiveness and cognitive performance in 60 healthy non-smokers with and without schizophrenia. A novel signal detection task in which correct responses were differentially rewarded in a 3:1 ratio was used to assess the extent to which participants modulated their behavior as a function of reward. Attention was assessed with the Continuous Performance Test Identical Pairs Version (CPT-IP) matched with no nicotine.

Results: Despite expected adverse effects such as nausea, nicotine significantly increased response bias toward the more frequently rewarded condition, at the expense of accuracy, independent of effects on attention or overall vigilance in controls and in those with schizophrenia not treated with clozapine. Improved attention and memory in both groups, with a greater effect in those with schizophrenia.

Conclusions: In summary, a single dose of transdermal nicotine enhanced response to non-drug-related rewards in the environment, and improved attention and memory performance in both groups and was associated with greater improvements in inhibition of impulsive responses and novelty detection in non-smokers with schizophrenia compared with controls. These effects may contribute to reinforcement of early smoking behavior and development of nicotine dependence in patients and controls. Nicotinic agonists may prove to be particularly effective nicotine dependence treatments for those with schizophrenia if they are shown to have a lasting effect to ameliorate some attention and memory deficits associated with the disorder.

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SYM6 WHAT ROLE DOES MAO INHIBITION PLAY IN SMOKING AND SMOKING CESSATION?

Chair: Paul B.S. Clarke, Ph.D.1 Presenters: Paul Cumming, Ph.D.,2 Karine Guillem, Ph.D.,2 Frances Leslie, Ph.D.,3 and Tony George, M.D.4 Discussant: Paul B.S. Clarke, Ph.D.1

1Charité-University Medicine Berlin; 2University of Pennsylvania; 3University of California Irvine; 4University of Toronto; 5McGill University; 6Ludwig-Maximilians Universität, München

Nicotine is widely considered to be a weak reinforcing possessing strong abuse liability. One possible explanation is that in smokers, nicotine’s reinforcing effects are potentiated by inhibition of brain monoamine oxidase (MAO). Thus, MAO activity is inhibited in tobacco smokers, and MAO-inhibiting drugs can dramatically increase nicotine intake in laboratory animals. Paradoxically, MAO is also attracting interest as a target for smoking cessation pharmacotherapy. This session will attempt to integrate recent findings from animal and human studies. Paul Cumming will describe several MAO-inhibiting chemicals in tobacco smoke, including harman and norharman. He will suggest that some of these chemicals attain pharmacologically significant levels in smokers, with potential effects on the mesolimbic dopamine system. Karine Guillem will describe how chronic treatment with MAO-inhibitors both increased the motivation to self-administer nicotine and prolonged the aversive state associated with nicotine withdrawal in rats. Frances Leslie will also report MAO inhibitor-induced potentiation of nicotine self-administration in rats, and will propose neural mechanisms underlying this potentiation. Tony George will describe the effects of MAO inhibitors in smoking cessation. In particular, he will present the results of a recently completed Phase II double-blind, randomized placebo-controlled clinical trial of the MAO-B inhibitor seteline hydrochloride for treatment of tobacco dependence in nicotine dependent community-dwelling cigarette smokers. Finally, Paul Clarke (discussant) will lead a critical discussion of the following issues. Can existing animal models adequately capture the effects of MAO-A and MAO-B inhibition in smokers? Would the mild MAO inhibition seen in smokers be sufficient to potentiate nicotine reinforcement? Can MAO inhibitors in smoke exert antidepressant effects? Lastly, how may MAO inhibition affect smoking cessation and relapse?

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SYM6A
MAO INHIBITION DOES NOT POTENTIATE AMPHETA-MINE-INDUCED DOPAMINE RELEASE IN THE [11C]raclopride-PET COMPETITION MODEL

Paul Cumming, Ph.D., Department of Nuclear Medicine, Ludwig-Maximilian’s University, Munich, Germany

Beta-carbolines in tobacco smoke are the likely cause of inhibition of MAO in brain of smokers, as has been revealed by PET studies with MAO-radioligands. It is a matter of some interest to determine whether this MAO inhibition contributes to the psychotomimetic effects of tobacco abuse, or is an epiphenomenon without functional consequences. Acute administration of beta-carbolines increases interstitial dopamine concentrations in rat nucleus accumbens (Iurlo et al., 2001), whereas MAO-blockade can potentiate the amphetamine-evoked release of dopamine in the striatum of rats (Majewska et al., 2003). It is suggested that inhibition of MAO due to smoking, by potentiating the action of psychostimulants, constitutes a generalization of the Ayahuasca effect, in which the action of a weak hallucigen is potentiated by co-administration of harmine, a beta-carboline MAO inhibitor. In order to test this claim, we carried out microPET studies with [11C]raclopride and amphetamine challenge (Pedersen et al., 2006); pre-treatment with pargyline (5 or 20 mg/kg) tended to increase the availability of dopamine D2 sites in rat striatum, suggesting a paradoxical reduction in dopamine storage. Chronic administration of harmine, as well as the mepine sulphate (1 mg/kg) evoked the expected 20% decline in [11C]raclopride binding throughout the rat striatum, indicating a near doubling of the competition from endogenous dopamine. However, the pargyline pre-treatment did not potentiate this effect. In other PET studies, pargyline (5 mg/kg) totally occluded the specific binding of the beta-carboline [11C]harmine throughout the brain of anesthetized pigs (Jensen et al., 2006). Acute challenge with amphetamine sulphate (1 mg/kg) evoked a 20% decline in [11C]raclopride binding just in the striatum. Likewise, the pargyline pre-treatment had no systematic effect on the magnitude of the amphetamine-induced [11C]raclopride binding changes in pig striatum. Together, these results seem to exclude important effects of acute MAO inhibition of amphetamine-induced dopamine release, as measured by the PET competition model. It remains to be determined if MAO inhibition can modulate the apparent dopamine release evoked by natural reinforcers, nicotine, or the conditioned release of dopamine.

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SYM6B
CHRONIC MAO-INHIBITORS TREATMENT INCREASED THE MOTIVATION TO SELF-ADMINISTER NICOTINE AND PROLONGED THE AVERSIVE STATE ASSOCIATED WITH NICOTINE WITHDRAWAL IN RATS

Karine Guillen, Ph.D., Dept. of Psychiatry, Univ. of Pennsylvania, Philadelphia, PA

The weak reinforcing effects of nicotine do not readily account for the intense addictive properties of nicotine. It is known that current smokers have decreased monoamine oxidase activities (MAO-A and MAO-B), and that cigarette smoke contains MAO inhibitors (MAO-A and B). Thus, we propose that decreased MAO activity could be involved in the addictive properties of smoking. We study here the possibility of a synergistic interaction between nicotine and two MAOIs on both the reinforcing and motivational properties of nicotine self-administration, and the aversive state associated with nicotine withdrawal in rats. The reinforcing and motivation properties of nicotine were evaluated in rats treated with chronic MAOI pretreatment (saline, tranylcypromine (MAO-I/B) or phenelzine (MAO-I/B)). We show that animals pretreated with MAOIs self-administered more nicotine and worked more to obtain the drug, indicating that chronic MAO-I/B self-administration enhances the reinforcing, as well as the motivational properties of nicotine in rats. Although the primary reinforcing properties of nicotine trigger the initiation of drug consumption, the negative consequences of drug abuse might motivate the continued administration of drug. Therefore, we study the effects of chronic MAOI pretreatment (saline, tranylcypromine and phenelzine) on the aversive motivational component of nicotine self-administration in rats rendered dependent on nicotine by subcutaneous implantation of osmotic minipumps (vehicle or nicotine base 3.2 mg/kg/day). We show that MAOI treatment induced a long-lasting and potentiated excitation up to 8 months conditioning and place aversion selectively in nicotine-abstinent rats. Such a long-lasting motivational effect might serve as a powerful negative stimulus motivating the continued administration of nicotine or nicotine-like substances. Together, these results suggest that the aversion of MAO activity by compounds present in tobacco smoke may combine with nicotine and contribute, at least in part, to both the intense addictive properties of tobacco and the persistence of tobacco habits that characterize smoking addiction.

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**SYM7A**

**NON-DAILY SMOKERS’ CRAVING AND WITHDRAWAL WHEN THEY ARE NOT SMOKING**

Saul Shiffman, Ph.D.*, Stuart Ferguson, Ph.D., Deborah Scharf, M.S., Hilary Tindle, M.D., M.P.H., and Sarah Scholl, B.A., University of Pittsburgh, Pittsburgh, PA, USA

Non-daily, intermittent smokers (ITS) constitute a substantial and growing proportion of smokers. The behavior of ITS is puzzling, in part, because it defies the more typical pattern of daily smokers, who are known to experience significant craving and withdrawal if they go as long as a day without smoking. In this study, we assessed craving and withdrawal intensity among ITS in three contexts: 1) at moments they were about to smoke; 2) on the days that they smoked, at randomly-selected times when they were not smoking; and 3) at random times on days when they did not smoke at all. Subjects were 47 ITS who reported smoking at least weekly, but not daily (56% female, average age 33.89 [SD 11.15]). Ecological momentary assessment methods were used to assess smoking and craving: subjects used a palmtop computer diary to record cigarettes for 3 weeks, and were also “beeped” at random by the computer about 5 times a day to assess craving and irritability (0-100 on a 33-mm VAS scale) at times when they were not smoking. This analysis is based on assessment of 1,616 smoking occasions and 1,991 random non-smoking assessments. Subjects smoked on 62% (+24%) of assessed days, on average. On smoking occasions, ITS reported average craving of 63.9 (±20.4). On days when they smoked, but at times that they were not smoking, their craving intensity was much lower, averaging 27.7 (±17.4); p<0.0001. On days when they did not smoke at all, their craving was lower still (p=0.0001), averaging 19.7 (±20.0); median craving was 13.6 on the 0-100 scale. On non-smoking days, almost half (46.5%) of ITS reported average craving <10, which was considered essentially “no craving” (physically within 3.3 mm of 0). Moreover, restlessness and irritability were not elevated on non-smoking days or at non-smoking times. These data suggest that ITS do experience substantial momentary craving at times that they smoke, but very low (and often no) craving between cigarettes and on days when they voluntarily forego smoking, and no elevation in withdrawal symptoms when they go without smoking.

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**SYM7B**

**CRAVING TO SMOKE IN FLIGHT ATTENDANTS: RELATIONSHIPS WITH FLIGHT DURATION, TIME SINCE LAST CIGARETTE AND OPPORTUNITY TO SMOKE**

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This study aimed to replicate and extend the findings of a previous study by our group, which suggested that craving to smoke was strongly determined by habits and expectations and had little relationship to smoking withdrawal. Participants were 53 flight attendants who were light to heavy smokers and were not permitted to smoke during the flight due to airline regulations. Each participant rated his or her craving to smoke on a 1-7 scale at pre-determined time points during a 2-way flight (each leg 3-5.5 hours long) and a one-way flight (8-13 hours long). The results indicate that craving to smoke was related to the time remaining to the end of the flight rather than to the time that has elapsed since the last cigarette. In both short and long flights, craving began to increase toward the end of the flight. Craving at the last measurement point was equal in short and long flights (approximately 4.5 on 1-7 scale). Craving levels at the final assessment point in the two short flights was much higher than craving levels at the parallel time point in the long flight (4.55 vs. 2.36, respectively, t(52) = 8.76, p < .001). In the two-legged flights, craving levels at the beginning of the second leg were lower than those at the end of the first leg, regardless of whether participants were able to smoke during the break between legs. These results corroborate the view that craving to smoke is primarily determined by cues and expectations and has relatively little relationship to smoking deprivation.

*No Funding.*

**SYM7C**

**IMPULSIVITY AND CRAVING FOLLOWING SMOKING CUE EXPOSURE**

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Current smokers may be more likely than non-smokers to possess characteristics such as impulsivity that increase their susceptibility to tobacco use and impair their ability to quit. Recent research suggests that impulsivity is a construct with multiple components that may influence tobacco use in different ways. Impulsive individuals may be particularly drawn to cigarette smoking because they are disproportionately attracted to rewarding stimuli and related environmental cues. Previous research indicates that impulsive smokers report higher levels of cigarette craving following exposure to smoking cues. The purpose of the present study was to examine whether specific components of impulsivity (sensation seeking, lack of premeditation, lack of perseverance, urgency) would predict specific aspects of cigarette craving (appetitive craving, negative affect craving) after exposure to tobacco cues in a laboratory setting. In a counterbalanced, repeated measures design, adult smokers (n = 60, 50% female) underwent a 5-minute exposure to a smoking cue in one session and a neutral cue in a second session. Craving was assessed immediately before and immediately after cue exposure. Smokers with high sensation seeking scores exhibited greater increases in appetitive craving ([t(118)=2.28, p = .02] but not negative affect craving. Those with higher scores on the urgency ([t(118)=3.77, p=.01] and lack of perseveration ([t(118)=2.52, p=.01] components of impulsivity reported greater increases in negative affect craving but not appetitive craving. Lack of premeditation was not significantly associated with either aspect of craving. These data suggest a complex relationship between impulsivity and reactivity to environmental smoking cues that varies across the multiple components of impulsivity and across different environmental contexts.

*The study was conducted while the first author was at the University of Illinois at Chicago. Supported by American Heart Association award 0410025Z.*

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SYM7D  REDUCING CRAVING WITH NON-INVASIVE BRAIN STIMULATION

Shirley Fecteau, Ph.D.*; Felipe Fregni, Ph.D., and Alvaro Pascual-Leone, M.D., Ph.D.

Neural correlates of drug- and food-craving include hyperactivity in reflexive areas, such as the orbitofrontal cortex, and lack of regulatory influence from lateral prefrontal (reflective) circuits. The modulation of these dysfunctional neural circuits through invasive and non-invasive brain stimulation may provide a valuable therapeutic approach. We have been investigating the potential of repetitive Transcranial Magnetic Stimulation (rTMS) or transcranial direct current stimulation (tDCS) to noninvasively modulate activity in the dorsolateral prefrontal cortex (DLPFC) and influence craving. We hypothesized that high frequency rTMS or anodal tDCS, both of which are thought to enhance activity in the targeted brain region, would increase activity in the DLPFC and thus promote reflective control onto reflexive systems, resulting in a decrease in craving. Various decision-making tasks were used to assess the cognitive impact of the intervention. DLPFC stimulation with high frequency rTMS or anodal tDCS significantly reduced craving for cocaine, nicotine, alcohol and food. The effects were greater for right- than left-sided stimulation and specific for stimulation parameters that increase activity in the targeted DLPFC. In conclusion, enhancing activity in the right DLPFC using high-frequency rTMS or anodal tDCS can reduce craving in cocaine dependent individuals, reduce nicotine craving, decrease alcohol abuse, and help control food craving. The effects may be mediated by dorsolateral prefrontal structure, but could also involve modulation of anterior insula. These results highlight the potential of noninvasive neuromodulation as a therapeutic tool for craving and substance abuse. Furthermore, the findings suggest that the right DLPFC plays a crucial role in implementing reflective control (informed by cultural, moral, and societal motives) of reflexive impulsive behaviors driven by primitive, self-centered motives.

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SYM8  REDUCING THE NICOSNP PROJECT: SUPPLEMENTING HIGH-DENSITY SNP MICROARRAYS FOR ADDICTION-RELATED GENES

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Progress in the search for human disease genes has been recently accelerated by advances in DNA technology. In the NIDA NeuroSNP project (http://zork.wustl.edu/neurosnp.html), we assessed the coverage of several commercial SNP microarrays for genes that are biologically relevant to addiction. We have assemb -led a set of addiction-related genes using both expert nomination and data from mouse systems genetics. The known variation in these genes was then compared to the variation that can be detected by various commercial SNP microarrays. We found that a significant amount variation would not be accounted for by all commercial SNP microarrays considered, including high-end models such as the Affymetrix 6.0 and Illumina HumanM1 arrays. We propose a solution to this problem by creating a publicly available SNP database that can be used to systematically fill these gaps. The database utilizes a biological prioritization scheme, known as a genomic information network (GIN), which permits researchers to select the most biologically relevant SNPs subject to s given budget. The GIN method incorporates SNP/gene functional properties (such as synonymy and promoters), mouse C57BL/6J mapping data and computational analysis, and mouse and human evolutionary conservation. This ensures high priority genomic regions are comprehensively covered in genetic studies of addiction. The GIN method can also be used to prioritize the results of a genome-wide association study (GWAS) for further study, such as replication genotyping, by highlighting SNPs with strong biological relevance. We discuss the application of this method to the NicSNP GWAS and candidate gene study of nicotine dependence. In particular, we show how, using the NicSNP data, the GIN method highlights a SNP in CHRNA5 nicotinic receptor gene which is independent evidence of replication in the literature for association with nicotine dependence.

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SYM8A  THE OREXIN/HYPOCRETIN SYSTEM: A POTENTIAL NOVEL TARGET IN NICOTINE ADDICTION

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The hypothalamus is a prominent central site of nicotine action but the phenotype of nicotine-sensitive neurons in this region has not been fully described. Hypothalamic orexin/hypocretin neurons are important regulators of state-dependent behavior and project to diverse brain regions such as the prefrontal cortex, insular cortex and ventral tegmental area. Recent studies point to an important role for orexin neuropeptides in the reinforcing and addictive properties of psychostimulant drugs. Here, we combined anatomical and pharmacological approaches to studying the effect of acute nicotine treatment on orexin neurons in rats. Systemic nicotine dose-dependently activated orexin neurons via an apparent a4b2-dependent mechanism. In vivo microdialysis experiments showed that nicotine also elevates glutamate and acetylcholine levels in the lateral hypothalamus. Furthermore, nicotine-elicited Fos expression in orexin neurons was reduced by lesions of either the prefrontal cortex or the cholinergic basal forebrain, suggesting that glutamatergic inputs from the PFC and cholinergic inputs from the basal forebrain act cooperatively to mediate the effect of acute nicotine on these cells. Tract-tracing studies indicated that a substantial portion of nicotine-sensitive orexin neurons project to forebrain regions that modulate attention and arousal, including the basal forebrain and thalamic paraventricular nucleus. We are currently studying the effect of nicotine on orexin inputs to the insular cortex, which is crucial for interoception, and orexin regulation of neural pathways mediating interoception (toxin's organism's awareness of its physiological status) may facilitate the intense craving that underlies relapse following withdrawal from chronic nicotine. Thus, the orexin system may represent a novel therapeutic target for the treatment of nicotine addiction.

National Alliance for Research on Schizophrenia and Depression; American Federation for Aging Research.

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SYM8C

ROLE OF GLUTAMATE IN NICOTINE DEPENDENCE

Athina Markou, Ph.D.1,2; Paul J. Kenny, Ph.D.2,3; Matthias Liechti, Ph.D.1,2; and Lori A. Knackstedt, Ph.D.2
1University of California at San Diego; 2The Scripps Research Institute; 3Medical University of South Carolina

Several motivational forces maintain nicotine dependence, including the primary rewarding properties of nicotine, the reward enhancing effects of nicotine (i.e., enhancement of the reward value of other stimuli by nicotine), the alleviation of nicotine withdrawal symptoms through further nicotine administration, and self-medication of cognitive or reward deficits in psychiatric populations with nicotine administration. Preclinical research in animal models of these various aspects of nicotine dependence suggests a critical role of glutamate transmission, and potentially its interactions with the y-aminobutyric acid (GABA), cholinergic and dopaminergic transmitter interactions in the ventral tegmental area, and possibly other brain sites, in the behavioral effects of nicotine. Specifically, decreasing glutamate transmission through actions at either excitatory postsynaptic ionotropic or metabotropic glutamate receptors, or inhibitory presynaptic metabotropic glutamate receptors decreased the rewarding effects of nicotine, and/or cue-induced reinstatement of nicotine-seeking. Similar decreases in nicotine self-administration were seen when a N-methyl-D-aspartate (NMDA) receptor antagonist or a metabotropic glutamate receptor 1 antagonist was injected into the ventral tegmental area. Further, early nicotine withdrawal is characterized by decreased function of presynaptic inhibitory metabotropic glutamate 2/3 receptors, increased expression of excitatory postsynaptic NMDA receptor subunits in limbic and/or frontal brain sites, and decreased expression of the cystine-glutamate exchanger in the ventral tegmental area and the nucleus accumbens. These neuroadaptations possibly develop to counteract decreased glutamate transmission that is hypothesized to characterize early nicotine withdrawal; while protracted abstinence may be associated with increased glutamate response to stimuli previously associated with nicotine administration. In conclusion, glutamate transmission in limbic and frontal brain sites is critically involved in nicotine dependence and could be targeted to treat the various aspects of nicotine dependence, and thus assist people to quit smoking.

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SYM9

SOCIOECONOMIC STATUS AND SMOKING CESSATION

Chair: David W. Wetter

presenters: Mohammad Siahpush1 and Lorraine R. Reitzel

Discussant: David B. Abrams2

University of Texas M.D. Anderson Cancer Center; University of Nebraska College of Public Health; Schroeder Institute for Tobacco Research and Policy Studies, American Legacy Foundation

Tobacco use is a major determinant of health disparities and there is a profound socioeconomic status (SES) gradient in smoking prevalence, cessation, and related disease burden. For example, 56% of the SES gradient in U.S. male mortality is attributable to tobacco. Although the SES gradient in smoking-related outcomes has been reported for decades, these disparities have become more pronounced over time. Unfortunately, there are few data addressing the specific mechanisms that link SES with smoking-related outcomes. The goal of this symposium is to present recent evidence investigating the socio-economic status (SES) gradient in smoking cessation among smokers who participated in the International Tobacco Control Four Country Survey, a prospective cohort study of smokers in the US, Canada, UK, and Australia. Dr. Wetter will present data evaluating a model of the specific pathways and mechanisms that link SES with smoking cessation. The study uses latent class analysis of smoking cessation to identify subgroups of smokers among smokers with different SES status. The primary predictor will be SES based on self-reported income. The secondary predictor will be self-reported education level. These findings may explain the evidence linking SES to smoking prevalence, cessation, and related disease burden. In addition, Dr. Reitzel will present data on the motivational processes underlying smoking behavior as a function of SES. These findings may explain the evidence linking SES to smoking prevalence, cessation, and related disease burden. Dr. Wetter will discuss a model of the pathways and mechanisms that link SES with smoking cessation, and Dr. Reitzel will present findings from a study of smoking behavior as a function of SES. These findings may explain the evidence linking SES to smoking prevalence, cessation, and related disease burden.
SYM9B

MODELING THE PATHWAYS LINKING SOCIOECONOMIC STATUS AND SMOKING RELAPSE: A STRUCTURAL EQUATION MODELING APPROACH

David W. Wetter1, Michael S. Businelle1, Darla E. Kendzor2, Carlos A. Mazaus3, Lauren L. Coffa2, Jennifer R. Reilly2, Lorraine R. Woerpel1, Yasmine Li1, Tracy J. Costello3, and Paul M. Cinciripini1; 1Dept. of Health Disparities Research, Univesity of Texas M.D. Anderson Cancer Center, Houston, TX; 2Dept. of Behavioral Science, University of Texas M.D. Anderson Cancer Center, Houston, TX; 3Dept. of Biostatistics, University of Texas M.D. Anderson Cancer Center, Houston, TX

Although there has been a socioeconomic gradient in smoking prevalence, cessation, and mortality disease burden for decades, these disparities have become even more pronounced over time. Unfortunately, there are few data addressing the specific pathways and mechanisms that link socioeconomic status (SES) with smoking-related behaviors. The purpose of the current study was three-fold. First, we synthesized previously published models of the relationship between SES and health, and of SES, neighborhood disadvantage, social support, stress/negative affect, craving, and agency measured on the quitdate. Second, the conceptual model was evaluated using a latent variable modeling approach in a diverse sample of 424 smokers seeking treatment (193 Whites; 141 Latinos). Finally, a multi-group structural modeling analysis was conducted to determine if the final model was a good fit across racial/ethnic groups. As hypothesized, SES had significant direct and indirect effects on relapse. Specifically, neighborhood disadvantage, social support, stress/negative affect, craving, and agency mediated the relation between SES and smoking relapse. Importantly, the multiple group analysis revealed differences across racial/ethnic groups.

The present study provides one of the first models integrating the specific mechanisms that link SES and smoking relapse. Policy, community, and individual-level interventions that target low SES smokers and address the specific pathways identified in the current model could potentially attenuate the impact of SES on relapse.

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SYM9C

SUBJECTIVE SOCIAL STATUS IS ASSOCIATED WITH POSTPARTUM RELAPSE

Lorraine R. Reitze1, Tracy Costello1, Jennifer Irvin Vidine1, Yisheng Li1, Patricia Dolan Mullens1, Mary M. Velasquez1, Paul M. Cinciripini2, Ludmila Coffa-Woerpel2, Anthony Greisinger2, and David W. Wetter1; 1The University of Texas, M.D. Anderson Cancer Center; 2The University of Texas-Houston, School of Public Health; 3The University of Texas-Austin, School of Social Work

Research has demonstrated that smoking during pregnancy is associated with increased smoking prevalence and cessation has also been demonstrated amongst pregnant women. Smoking during pregnancy represents a unique public health opportunity as it's tied to one's community and taps into perceptions of inequality. The goal of the current study was to examine the unique predictive ability of SSS with respect to postpartum relapse and established predictors of postpartum smoking among a large primary care clinic in the Midwest (n=1653) were proactively called by phone by a clinic nurse (RN) to offer referral to telephone counseling for smoking cessation. Of those, 80% identified themselves as smokers reached by phone 24% were enrolled in phone counseling. This correlated to 11% of all smokers enrolled in the medical record. There were no significant differences between patients who agreed to enroll in phone counseling and those who did not.

Of patients identified as smokers in the electronic medical record of a large primary care clinic in the Midwest (n=1653) were proactively called by phone by a clinic nurse (RN) to offer referral to telephone counseling for smoking cessation. Three referral strategies were tested sequentially. Patients in the first phase (n=590) received a direct offer of being transferred to counseling. In the second phase (n=457), the phone script incorporated elements of motivational interviewing, and the final phase (n=406) included motivational interviewing plus an offer of full coverage for prescription stop-smoking medications for those who agreed to enroll in phone counseling.

The proportion of patients identified by the electronic medical record as current smokers were reached by phone. Of those, 80% identified themselves as current smokers, and 57% of smokers expressed interest in quitting. Of current smokers reached by phone 24% were enrolled in phone counseling. This corresponds to 11% of all smokers enrolled in the medical record. There were no significant differences in the uptake of phone counseling between the three phases of this pilot program.

Conclusions: This pilot study resulted in a high percentage of contacts with current smokers. The proportion of patients enrolled in phone counseling is significantly higher than media campaigns or fax referrals from clinicians. Proactive outreach has the potential to substantially increase use of assistance for smoking cessation in the population.

Blue Cross Blue Shield of Minnesota.

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SYM10A

PROACTIVE OUTREACH TO SMOKING PATIENTS IDENTIFIED IN THE ELECTRONIC MEDICAL RECORD: A PILOT PROJECT

Larry An1, Matthias Kirch1, Colleen Klatl2, Jasjit S. Ahluwalia3, Jim Bhum4, Rhonda Evans5, Nina Aleci1, Marc Manley1, and William Nersesian6; 1University of Minnesota; 2Blue Cross Blue Shield of Minnesota; 3Fairview Physicians Associates; 4University of Minnesota; 5Blue Cross Blue Shield of Minnesota; 6Fairview Physicians Associates

Objectives: To assess the feasibility of proactive telephone outreach to smoking patients identified by the electronic medical record.

Study Design: Patients identified as smokers in the electronic medical record of a large primary care clinic in the Midwest (n=1653) were proactively called by phone by a clinic nurse (RN) to offer referral to telephone counseling for smoking cessation. Three referral strategies were tested sequentially. Patients in the first phase (n=590) received a direct offer of being transferred to counseling. In the second phase (n=457), the phone script incorporated elements of motivational interviewing, and the final phase (n=406) included motivational interviewing plus an offer of full coverage for prescription stop-smoking medications for those who agreed to enroll in phone counseling.

Results: Approximately 60% of patients identified by the electronic medical record as current smokers were reached by phone. Of those, 80% identified themselves as current smokers, and 57% of smokers expressed interest in quitting. Of current smokers reached by phone 24% were enrolled in phone counseling. This corresponds to 11% of all smokers enrolled in the medical record. There were no significant differences in the uptake of phone counseling between the three phases of this pilot program.

Conclusions: This pilot study resulted in a high percentage of contacts with current smokers. The proportion of patients enrolled in phone counseling is significantly higher than media campaigns or fax referrals from clinicians. Proactive outreach has the potential to substantially increase use of assistance for smoking cessation in the population.

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SYM10

TREATMENT OF SMOKING AS A CHRONIC ILLNESS IN PRIMARY CARE

Chair: Edward F. Ellebeck, M.D., M.P.H.1;2
Presenters: Ana-Paula Cupertino, Ph.D.,1; and Lawrence C. An, M.D.2
Discussant: Scott Sherman, M.D.2

1University of Kansas School of Medicine; 2University of Minnesota; 3New York University

Cigarette smoking is a chronic illness characterized by repeated cycles of quit attempts and relapse. In practice, however, most smoking cessation interventions are based on single, short-term interventions lasting only a few weeks or months. These interventions provide treatment only to smokers that are already prepared to quit and do not consistently reengage relapsed smokers in new treatment plans. New models of chronic disease care have been developed and implemented successfully for the treatment of other chronic illnesses such as diabetes, asthma, and heart failure. These models of chronic disease management may provide an alternative approach for expanding the reach and effectiveness of smoking cessation efforts. In this symposium, Dr. An will describe the results of proactive telephone outreach offering cessation services to smokers identified in a primary care clinic’s electronic medical records system. Dr. Ellebeck will describe an alternative model in which centralized case managers (counselors) work in parallel with primary care practices to promote smoking cessation. Dr. Cupertino will describe the interest of smokers in repeated smoking cessation efforts and show the impact of cessation efforts for smokers requesting up to 4 cycles of treatment. Finally, an interactive discussion will be led by Dr. Sherman who will describe how the “medical home” model for primary care could impact the treatment of smoking cessation as a chronic disease.

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SYM10B IMPACT OF VARYING LEVELS OF DISEASE MANAGEMENT ON SMOKING CESSATION: A RANDOMIZED TRIAL

University of Kansas School of Medicine; University of Michigan; University of Minnesota Medical School

Cigarette smoking is a chronic, relapsing illness that is inadequately addressed in primary care practice. We compared cessation rates among smokers receiving pharmacotherapy management alone or when combined with either moderate-intensity or high-intensity disease management that includes counseling and provider feedback. We identified and recruited smokers from 50 rural primary care practices and randomly assigned patients smoking >10 cigarettes/day to one of three interventions: 1) free pharmacotherapy with pharmacotherapy management alone at four 6-month intervals (n = 250); 2) pharmacotherapy management supplemented with offers of up to 2 telephone counseling calls every 6 months (moderate-intensity disease management, n = 249); or 3) pharmacotherapy management supplemented with up to 6 telephone counseling calls every 6 months (high-intensity disease management, n = 251). With both moderate and high-intensity disease management, quit attempts with each offer of treatment increased in the participants' physician every 6 months. Participants were not required to quit or utilize pharmacotherapy. Pharmacotherapy utilization was comparable across treatment groups, with 63.9%, 40.8%, and 4.6% requesting pharmacotherapy during the 1st, 2nd, and 4th 6-month cycles of treatment. Abstinence rates increased throughout the 24-month study. At 12 months, 15.6%, 20.6%, and 23.9% of pharmacotherapy management, moderate-intensity, and high-intensity disease management participants, respectively, reported abstinence (p=0.04). Significant treatment group differences persisted at month 18, but by 24 months abstinence rates were similar in the three groups (23.0%, 23.5%, and 27.9% for pharmacotherapy management, moderate-intensity, and high-intensity disease management participants, respectively (p=0.43). Pharmacotherapy management costs were $630 per successful quitter. Smokers are willing to make repeated pharmacotherapy-assisted quit attempts leading to progressively greater smoking abstinence. Although more intensive disease management can temporarily increase quit rates, pharmacotherapy management alone appears to be highly cost-effective with similar long-term outcomes.

Funding: This research was supported by the grant number CA 1102390 from the National Cancer Institute at the National Institutes of Health.

SYM11 NICOTINE AND INFORMATION PROCESSING

Chair: Allison C. Hoffman, Ph.D.,*
Presenters: Amir Levine, M.D.,* Evelyn K. Lambe, Ph.D.,* Raad Nashmi, Ph.D.,* and Thomas J. Gould, Ph.D.

Column University; University of Toronto; University of Victoria; Temple University; National Institute on Drug Abuse

Although people smoke cigarettes because of nicotine's reinforcing effects, the central effects of nicotine are far more diverse. Of particular interest are nicotine's effects on information processing, which could play a key role in the maintenance of tobacco use and the chronic relapses associated with quit attempts. The goal of this symposium is to examine nicotine's effects on cognitive, sensory and emotional information processing. There will be four presentations. Dr. Amir Levine will discuss nicotine's effects on information processing via epigenetic mechanisms. Dr. Evelyn Lambe will discuss the cellular mechanisms underlying the ability of nicotine to perturb attention circuitry during development, focusing on an unusual subtype of nicotinic receptors (alpha4beta2alpha5) that are essential for the normal maturation of corticalalaminic neurons. Dr. Raad Nashmi will discuss the effect of chronic nicotine on cell specific upregulation of functional alpha 4 nicotinic receptors in the CNS. Lastly, Dr. Thomas Gould will discuss some intriguing interactions between nicotine and learning that produce a novel pattern of MAPK gene expression. Since the target audience includes both animal and human nicotine/tobacco researchers, it is hoped that these presentations will stimulate discussion on the mechanisms that underlie nicotine's effects on information processing, and the impact that these effects may have on long-term tobacco users.

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SYM10C CONSECUTIVE CYCLES OF SMOKING CESSATION PHARMACOTHERAPY

A. Paula Cupertino, Ph.D.*, Kimber Richter, Ph.D., Laura M. Musulman, M.A., M.P.H., Niamat Nazir, M.B.B.S., M.P.H., Jonathan D. Mahnken, Ph.D., Theresa I. Shreiner, Ph.D., and Edward F. Ellerbeck, M.D., M.P.H., University of Kansas School of Medicine

Introduction: Tobacco dependence is a chronic, relapsing condition. Most treatment, however, utilizes short-term, acute care approaches. Only a few studies have looked at the effects of recycling or relapse sensitive smokers, and many insurers and smoking cessation programs restrict smokers to 1 or 2 cycles of treatment.

Objectives: The purpose of this study is to assess the effect on smoking cessation of offering repeated courses of pharmacotherapy.

Methods: Kan Quilt was a population-based clinical trial of a disease-manage program for smoking cessation that enrolled 750 smokers seen in rural primary care practices. Every six months (months 0, 6, 12 and 18), participants were offered a free 6-week course of 21mg/day nicotine patch or a 7-week course of bupropion 300mg/day, regardless of their interest in quitting smoking. This analysis focused on the persistent smokers who made repeated pharmacotherapy-assisted quit attempts with each offer of treatment.

Results: Of the 726 participants that completed the trial, 464 (63.9%) took medication during the first cycle of treatment. Of continuing smokers, 52.7% of 383, 45.7% of 177 and 64.7% of 68 opted for 2nd, 3rd and 4th consecutive cycles of pharmacotherapy, respectively. Following the 1st, 2nd, 3rd, and 4th cycles of pharmacotherapy, six-month quit rates were 17.4%, 12.4%, 16.0% and 15.9%, respectively. Across all four cycles of treatment, cessation rates were higher for participants making pharmacotherapy-assisted quit attempts compared to those declining pharmacotherapy. In experiments performed with transgenic mice deleted for the subunit, this subtype is expressed in a relatively few regions of the brain and is unique among the high-affinity nicotinic receptors for its degree of permeability to calcium and, therefore, its potent activation of downstream signaling cascades. In experiments performed with transgenic mice deleted for the subunit, this subtype is expressed in a relatively few regions of the brain and is unique among the high-affinity nicotinic receptors for its degree of permeability to calcium and, therefore, its potent activation of downstream signaling cascades. These data suggest that the development of nicotinic receptor subtypes may be critical for the normal development of corticalalaminic neurons and suggest a cellular mechanism for the vulnerability of developing attention circuitry to nicotine.

Funded by the Canadian Institutes of Health Research (MOP98825).

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We have recently shown robust nicotinic excitation of corticalalaminic neurons during development. These neurons gate thalamic activity and, in adulthood, play a critical role in attention and information processing. The developmental sensitivity to nicotine stimulation suggests a role for nicotinic receptors in the maturation and plasticity of these neurons. Moreover, the timing of this sensitivity suggests that developing corticalalaminic circuitry is vulnerable to disruption by exposure to the drug nicotine. Here, we show that the developmental peak of corticalalaminic nicotinic currents depends on the presence of an unusual subtype of nicotinic receptor (alpha4beta2alpha5). This subtype is expressed in a relatively few regions of the brain and is unique among the high-affinity nicotinic receptors for its degree of permeability to calcium and, therefore, its potent activation of downstream signaling cascades. In experiments performed with transgenic mice deleted for the subunit, this subtype is expressed in a relatively few regions of the brain and is unique among the high-affinity nicotinic receptors for its degree of permeability to calcium and, therefore, its potent activation of downstream signaling cascades. In experiments performed with transgenic mice deleted for the subunit, this subtype is expressed in a relatively few regions of the brain and is unique among the high-affinity nicotinic receptors for its degree of permeability to calcium and, therefore, its potent activation of downstream signaling cascades. These data suggest that the development of nicotinic receptor subtypes may be critical for the normal development of corticalalaminic neurons and suggest a cellular mechanism for the vulnerability of developing attention circuitry to nicotine.

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SRNT • Symposia

SYM11B  CELL SPECIFIC UPRGULATION OF ALPHA4+ NICOTINIC RECEPTORS WITH CHRONIC NICOTINE

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Exposure to chronic nicotine results in the upregulation of nicotinic acetylcholine receptors (nAChRs) in the brains of chronic smokers. To understand the effects of chronic nicotine, we need to measure the molecular and functional changes in specific neurons and synapses. We sought to quantify α4 containing (α4+) nAChRs in specific neuronal subtypes at subcellular resolution. Using homologous recombination, we engineered knock-in mice that express α4 nAChR subunits containing yellow fluorescent protein (α4YPFP). Mice were implanted with mini-osmotic pumps, which delivered either saline or nicotine (2 mg/kg/hr for 10 d). Spectral confocal imaging was performed to isolate α4YPFP fluorescence in various brain regions. We found that chronic nicotine did not alter the number of α4+ nAChRs in the neurons implicated in drug addiction and reward — the dopaminergic (DA) neurons in the ventral tegmental area (VTA) nor in the DA neurons in the substantia nigra pars compacta (SNC). Instead, the receptors were selectively upregulated in GABAergic neurons in both the VTA and substantia nigra (SN). Correspondingly, in whole-cell patch-clamp recordings from midbrain slices there was higher basal firing frequencies and greater acute nicotine responsiveness in SNC GABAergic neurons exposed to chronic nicotine. Meanwhile DA neurons that were exposed to chronic nicotine had lower basal firing rates and were less responsive to acute nicotine. Our second intriguing finding was that the largest upregulation of α4 nicotinic receptors occurred in the medial perforant path of the hippocampus. This corresponded in enhanced long-term potentiation of excitatory postsynaptic responses when upregulated receptors were activated by acute nicotine. The pattern of cell specific upregulation of α4 nAChRs explains two effects of chronic nicotine — tolerance of the DA reward pathway and sensitization of synaptic transmission in the forebrain.

This work was supported by an NSERC Discovery Grant (R.N.), a NARSAD Young Investigator Award (R.N.) and an Elizabeth Ross Fellowship (R.N.). H.A.L. was supported from the following grants: NIDA DA-17279, NS-11756, Philip Morris External Research Program, and California TRDRP. There is no conflict of interest in the study.

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SYM11C  NICOTINE AND LEARNING INTERACT TO PRODUCE A NOVEL PATTERN OF HIPPOCAMPAL GENE EXPRESSION THAT UNDERLIES LONG-LASTING CHANGES IN LEARNING

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Nicotine use results in long-lasting changes in learning and behavior; this suggests that nicotine administration can produce robust changes in synaptic plasticity. Long-lasting changes in behavior and memory are linked to changes in gene transcription. Recent work from our lab suggests that the effects of nicotine in the hippocampus are necessary and sufficient to produce changes in learning. In mice, acute intrahippocampal nicotine infusion enhanced contextual learning whereas withdrawal from chronic intrahippocampal nicotine infusion disrupted contextual learning. These effects were not present in beta2 nicotinic receptor mutant knockout mice. In a series of experiments, we tested if nicotine and learning would interact to produce a pattern of gene expression different than that found with either nicotine administration or learning alone; if inhibition of related gene products would inhibit the effects of nicotine on learning; and whether the beta2 nicotinic receptor subunit is necessary for observed gene expression changes. Using a cDNA microarray to screen for changes in gene transcription due to an interaction of nicotine and learning, the mitogen activated protein kinase (MAPK) family (with emphasis on the c-Jun N-terminal Kinase 1 (JNK1)) was targeted for further analysis. qRT-PCR indicated that JNK1 mRNA was upregulated in the hippocampus 30 minutes post training in nicotine-treated mice trained in contextual fear conditioning but downregulated 2 hours post training. This pattern of gene expression was unique to JNK1 and absent in mice treated without nicotine and untrained nicotine-treated mice. Changes in JNK1 mRNA expression were absent in beta2 nicotinic receptor mutant knockout mice. Finally, inhibition of hippocampal JNK protein 60 minutes post training blocked the enhancement of learning by nicotine. Thus, nicotine and learning interact to produce a novel pattern of gene expression in the hippocampus mediated by beta2-containing nicotinic receptors that results in a long-lasting change in learning. The ability of nicotine and learning to interact to alter gene expression, learning, and hippocampal function may contribute to nicotine addiction.

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SYM11D  A MOLECULAR STUDY OF THE GATEWAY HYPOTHESIS OF STAGES IN ADOLESCENT DRUG USE

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The Gateway hypothesis describes a regular developmental sequence and stages of progression of drug consumption in which the use of cigarettes (nicotine) or alcohol precedes the use of other illicit drugs. It raises two fundamental questions that can only be addressed in animal models: (1) Is there a biological basis, separate from the affect of psychosocial factors, for the observation that the use of a specific drug predisposes to the subsequent use of another? and (2) What cellular and molecular mechanisms underlie this sequential progression of drug use? To address these issues, we designed a paradigm of sequential drug administration. We explored how nicotine, a drug used earlier in the sequence, and cocaine and other drugs that are taken later in the sequence alter the level of transcription of selected genes in the striatum. After both oral nicotine treatment (7 d and 24 hr) and acute cocaine injection, fosB expression increased. We then examined whether the increased expression of these genes following the administration of one drug was modified by pretreatment with the other drug, either cocaine or nicotine. Pre-exposure to nicotine for 7 d there was a marked increase in fosB expression in response to a cocaine injection. When the protocol was reversed (cocaine treatment first, nicotine challenge), fosB expression did not change. In electrophysiological studies, we show that nicotine priming enhances the changes in LTP that are typical to cocaine in several brain regions. Behaviorally mice exposed to 7-d nicotine have increased sensitization to cocaine and methamphetamine. We show here a molecular mechanism that underlies the progression from the use of nicotine to other drugs of abuse. We further describe changes in behavior and electrophysiological signatures of long-term synaptic plasticity that parallel epigenetic changes and changes in gene expression, which provide the neurobiological underpinnings for the Gateway hypothesis.

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PA1-2  EFFECT OF THE IRISH SMOKEFREE LEGISLATION ON SMOKING BEHAVIOUR AMONG BAR WORKERS

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Background: On March 29 2004, the Republic of Ireland became the first EU country to introduce a nationwide ban on workplace smoking. While the focus of this measure was to protect worker health by reducing exposure to secondhand smoke, other effects such as reduced smoking prevalence and consumption were likely.

Objectives: To assess smoking prevalence in a random sample of bar workers and to compare changes in smoking behaviour in bar workers with changes in an equivalent age and occupational sub-sample of the general public after implementation of the smokefree legislation.

Methods: A random sample of bar workers from Cork City was surveyed before (n=129) and after (n=107; 82.9% follow-up rate) implementation of the smokefree legislation. Self-report and combined self-report and cotinine concentration were used to determine smoking status before and one year after the legislation. A cross-sectional random telephone survey of the general population was conducted before and one year after the smokefree legislation. There were 1,240 pre- and 1,221 post-ban participants in the equivalent age and occupational sub-sample of the general population.

Results: Self-reported smoking prevalence among Cork bar workers was much higher (51%), particularly in women (61%), than in the occupationally equivalent general population sub-sample (28%). There was a non-significant decline in smoking prevalence among Cork bar workers one year post-ban (self report: -2.8%, p=0.51; combined self report and cotinine: -4.7% from 56.1% to 51.4%, p=0.13), but a significant decline in consumption of four cigarettes (95%CI 2.21 to 6.36) per day. Within the matched general population sub-sample there was a significant drop in smoking prevalence one year post-ban but no significant change in consumption. Among the 77 bar workers followed for three years, smoking prevalence rates declined significantly two years post-ban (p<0.05).

Conclusions: Ireland’s workplace smoking legislation was accompanied by a drop in smoking prevalence among both bar workers and the general population sub-sample.

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PA1-3  WHAT DO SMOKERS SMOKE WHEN “LIGHT” AND “MILD” DESCRIPTORS ARE REMOVED FROM CIGARETTE PACKAGES?

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Objective: In 2007, major Canadian cigarette manufacturers voluntarily agreed (after investigation by the Competition Bureau of Canada) to remove “light” and “mild” descriptors from cigarette packages. Each company signed its own agreement prior to July 31, 2007. We examined changes in brand descriptors smoked by smokers of “light” and “mild” brands after these descriptors were removed from cigarette packages in 2007.

Methods: Data collected from January-June 2006 and January-June 2008 as part of the ongoing Ontario Tobacco Survey were used for these cross-sectional analyses. Adult smokers were asked the brand and strength of cigarettes they usually smoked. Smokers who reported smoking a brand family that was covered under the voluntary agreements (n=865, 2006; n=803, 2008) were categorized as to whether they reported smoking: cigarette brands with “light”, “mild” or similar terms in the name; the replacement form of the “light” and “mild” brands (e.g., premiere and smooth, 2008 only); or, regular or full strength brands. Analyses addressed population weights and complex sampling design.

Results: Among smokers who reported smoking on of the brand families covered under the voluntary agreements, there was an increase from 2006 to 2008 in the proportion of those smoking regular strength brands (29.0% vs. 38.0%, p<0.05) [due predominantly to an increase among males and among respondents older than 24 years of age]; a majority of these smokers in 2008 were smoking brands with “light” descriptors 41%; [95% CI 36-46%] or replacement terms 21% [95% CI 18-25%] in its name. There were no significant differences by gender in the proportion smoking regular strength brands in 2006 or 2008, and no significant differences by age group in 2008.

Conclusions: Even after “light” and “mild” descriptors were supposed to be removed from cigarette packages, a significant proportion of smokers still report smoking these brands. The possible reasons for this, including the use of replacement package cues based on colour rather than words, is described.

This research was conducted by the Ontario Tobacco Research Unit, which receives funding from the Ontario Ministry of Health Promotion.

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PA1-1  ANTI-CONTRABAND POLICIES: EVIDENCE FOR BETTER PRACTICE

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This knowledge synthesis explores and evaluates anti-contraband tobacco policies, through a study that is global in scope. This project combines both academic and policymaker research and perspectives, to assess which measures have been most successful at addressing contraband tobacco, and how the illicit trade frequently adapts to policy implementations, requiring iterative strategies by policymakers. An important contribution of this research looks at the various ways in which contraband tobacco can exist, ranging from illicit growing and distribution, unlicensed manufacturing, as well as organized tobacco smuggling and counterfeiting. The case-studies addressed in this research range from provincial and federal approaches in Canada; State approaches in the United States; as well as international case-studies including the UK, Australia, Brazil, and the European Union. In combining this diverse set of case-studies, we were able to gather information about the various policy measures taken in each jurisdiction, what the impacts have been, and what we might learn from their respective experiences. An innovative knowledge synthesis design reaches beyond traditional sources of information. Systematic searches, reviews and assessments were conducted of formal and grey literature. A total of 113 scholarly articles were identified, but only 12 specifically addressing issues of contraband policy. A total of 39 governmental reports, and 45 non-academic reports were also reviewed. To further understanding of the contexts, mechanisms and outcomes associated with various anti-contraband measures 47 semi-structured interviews were conducted with academics, policymakers and practitioners. Findings were then validated through four unique face-to-face expert focus panel groups.

Canadian Tobacco Control Research Initiative.

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Support for smoke-free policies among smokers and non-smokers in six cities in China: findings from ITC China

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1University of Waterloo; 2Chinese Centers for Disease Control and Prevention; 3Guangzhou Center for Disease Control and Prevention; 4Shenyang Center for Disease Control and Prevention; 5Cancer Control Victoria; 6Roswell Park Cancer Institute

Objectives: To examine the current situation of smoke-free policies and factors associated with support for comprehensive smokefree policies in six cities in China.

Methods: The current smokefree policies in Beijing, Shenyang, Shanghai, Guangzhou, and Yinchuan were reviewed. Multistage sampling was used to sample 4,815 smokers and 1,270 non-smokers in the six cities. Face-to-face interviews were conducted to examine their support for smokefree policies. Multivariate Logistic regression models were used to explore factors associated with attitudes towards comprehensive smokefree policies.

Results: None of the six cities have implemented comprehensive smokefree policies. Most respondents support comprehensive smokefree policies in hospitals, schools, conference rooms, and public transport vehicles. In contrast, only 42.8% of the smokers and 52.9% of the non-smokers support comprehensive smokefree policies in workplaces; 21.3% of the smokers and 40.4% of the non-smokers support comprehensive smokefree policies in restaurants and bars. Smokers support comprehensive smokefree policies in workplaces (OR=1.26, 95% CI 1.06-1.48); for restaurants and bars (OR=1.30, 95% CI 1.08-2.51).

Conclusions: More comprehensive smokefree policies are needed in the six cities. Efforts need to be made to increase public knowledge about the adverse health effects of secondhand smoke, which may in turn increase support for comprehensive smokefree policies in China.

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Support and correlates of support for bans on smoking in cars with children in Canada, the United States, the United Kingdom, and Australia: findings from the 2007 wave of the ITC four country survey

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Beginning in 2006, banning smoking in cars with children has become a rapidly growing tobacco control policy movement, consistent with recent evidence from air quality monitoring studies that smoking in cars produces extremely high levels of secondhand smoke. As of August 2008, 19 jurisdictions throughout the United States, Canada, and Australia have implemented such a ban, with many other jurisdictions considering such an action. To date, there have been very few studies examining the correlates of support for car smoking bans, and none of the existing studies have been international in nature. We conducted such a study among smokers in four countries with jurisdictions considering such a ban. We analyzed data from 6,955 adult current smokers from the 2007 wave of the International Tobacco Control (ITC) Four Country Survey, a longitudinal cohort survey of smokers in Canada, United States, United Kingdom, and Australia. Support for car bans was highest among smokers in Australia (83%), followed by smokers in the UK (75%) and Canada (74%); support was considerably lower—but still high—among smokers in the US (60%).

Correlating for demographics, support was found to be higher among smokers who: believe that SHS causes asthma in children, believe that SHS causes wheezing in children, and believe that SHS is linked to asthma in children. Supporting car smoking bans is associated with a higher likelihood of believing in the adverse health effects of secondhand smoke, including associations with asthma, cancer, respiratory infections, and cardiovascular disease.

Findings: The most clinically important findings were significant main effects for treatment condition, time, and the treatment X time interaction. The E-CBT condition produced high abstinence rates that were maintained throughout the two year study period (week 24: 58.3%), 52 (55.0%), 64 (54.6%), and 104 (54.8%), and was significantly more effective than E-NRT, E-Combined, and BT across that period. No other treatment condition was significantly different than BT. No effects for gender were found.

Conclusions: Extended cognitive behavioral treatments can produce high and stable abstinence rates for both men and women. NRT does not add to the efficacy of extended CBT, and may hamper its efficacy. Research is needed to determine if these results can be replicated in a sample with a greater range of ages, and improved upon with the addition of medications other than NRT.

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Extended treatment of older smokers

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Aims: Smoking cessation treatments achieve abstinence rates of 25% to 30% at one year. Low rates may reflect failure to conceptualize smoking as a chronic disorder. The aims of the present study were to determine the efficacy of extended cognitive behavioral and pharmacological interventions in smokers > or = to 50 years of age, and to determine if gender differences in efficacy existed.

Design: Open randomized clinical trial. Setting: A free-standing, smoking treatment research clinic. Participants: 403 smokers of > or = 10 cigarettes per day, all 50 years of age or older. Intervention: Participants completed a 12-week treatment that included group counseling, nicotine replacement therapy (NRT), and bupropri- on. Participants, independent of smoking status, were then randomly assigned to follow-up conditions: (1) Brief Treatment (BT; no further treatment); (2) Extended NRT (E-NRT; 40 weeks of nicotine gum availability); (3) Extended Cognitive Behavioral Therapy (E-CBT; 11 cognitive behavioral sessions over a 40 week peri- od); or (4) E-CBT plus E-NRT (E-Combined; 11 cognitive behavioral sessions plus 40 weeks nicotine gum availability).

Measurements: Primary outcome variable was seven-day point prevalence biologically verified abstinence at weeks 24, 52, 64, and 104.

Findings: The most clinically important findings were significant main effects for treatment condition, time, and the treatment X time interaction. The E-CBT condi- tion produced high abstinence rates that were maintained throughout the two year study period (week 24: 58.3%), 52 (55.0%), 64 (54.6%), and 104 (54.8%), and was significantly more effective than E-NRT, E-Combined, and BT across that period. No other treatment condition was significantly different than BT. No effects for gender were found.

Conclusions: Extended cognitive behavioral treatments can produce high and stable abstinence rates for both men and women. NRT does not add to the effica- cacy of extended CBT, and may hamper its efficacy. Research is needed to deter- mine if these results can be replicated in a sample with a greater range of ages, and improved upon with the addition of medications other than NRT.

NIH.
PA2-3
42 MG/DAY PRE-CESSATION NICOTINE PATCH TREATMENT FOR HIGHLY DEPENDENT SMOKERS
Jed E. Rose*, Frederique M. Behm, Joseph E. Herskovic, and Eric C. Westman, Duke University

Previous studies have shown that initiation of nicotine skin patch treatment two weeks before a target quit date approximately doubles rates of continuous smoking abstinence compared to initiating NRT on the quit date. Pre-cessation NRT may reduce dependence on cigarettes before the quit smoking date, thereby facilitating smoking cessation in a randomized clinical trial. 1504 adult with relatively low levels of dependence, assessed by FTND scores, benefited more from 21 mg/day pre-cessation nicotine patch treatment than highly dependent smokers. We hypothesized that highly dependent smokers may require higher doses of NRT than 21 mg/day. In the current study, 480 adult were divided into groups receiving either 21 mg/day or 42 mg/day nicotine patch treatment (double-blind), beginning two weeks before quitting. All participants are asked to stop smoking desoxinquinoctill asleep before the quit date in order to reduce the likelihood of nicotine overdose. Based on previous findings that the decrease in FTND score during the pre-cessation period predicted subsequent abstinence, we assess participants' change in FTND score after two weeks on patch treatment. After the quit date, participants are weaned off NRT using successively lower doses of nicotine patch over 10 weeks. Based on 353 subjects enrolled thus far, 42 mg nicotine patch treatment produced a significantly greater decrease in FTND score than the 21 mg patch (p<0.03). Reduction in FTND score, in turn, predicted success (p<0.05). As hypothesized, abstinence also tended to be greater for highly dependent smokers (FTND score >6) receiving 42 mg nicotine patch treatment, whereas the opposite trend was found for low dependence smokers (interaction p<0.1). Results support the hypothesis that highly dependent smokers differentially benefit from higher doses of pre-cessation NRT. Moreover, dependence level could be a useful predictor of outcomes. Smokers who do not show reductions in dependence before reaching their target quit dates may need to be assigned to alternative treatments that are more likely to succeed.

Philip Morris USA, Inc.

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PA2-4
EFFICACY OF THREE SINGLE AND TWO COMBINATION PHARMACOTHERAPIES AMONG DAILY SMOKERS: A RANDOMIZED PLACEBO-CONTROLLED CLINICAL TRIAL
Megan E. Piper, Ph.D.*, Stevens S. Smith, Ph.D., Tanya R. Schlam, Ph.D., Michael C. Fiore, M.D., M.P.H., Douglas E. Jorenby, Ph.D., David Fraser, M.S., and Timothy B. Baker, Ph.D., University of Wisconsin

The Wisconsin Transdisciplinary Tobacco Use Research Center (TTURC) conducted head-to-head comparisons of single and combination pharmacotherapies for smoking cessation in a randomized placebo-controlled clinical trial. 1504 adult quit smokers were randomized to one of six different pharmacotherapies: Bupropion (n = 264), Nicotine Lozenge (n = 260), Nicotine Patch (n = 262), Bupropion + Nicotine Lozenge (n = 262), Nicotine Patch + Nicotine Lozenge (n = 287) or Placebo (n = 189). Approximately 58% of the participants were women, 83.9% were White, and 13.6% were African-American. Participants had a mean age of 44.7 years (SD = 11.1) and smoked, on average, 21.43 cigarettes per day (SD = 8.93). Abstinence rates at 6 months post-quit were: Placebo (22.2%), Bupropion (31.8%), Nicotine Lozenge (33.5%), Patch (34.4%), Bupropion + Lozenge (32.2%) and Patch + Lozenge (40.1%). All 5 active conditions, relative to placebo, had significantly higher abstinence rates at 1 week, end of treatment and 6 months post-quit, with the exception that individuals assigned to the placebo did not have significantly higher abstinence rates than the placebo group at 1 week post-quit. However, only the Patch + Lozenge condition was superior to placebo at 6 months with correction for false-positive error. When the combination therapies were compared to the monotherapies, results showed that combinations outperformed their respective monotherapies at the end of treatment and that Lozenge alone performed worse than Patch + Lozenge or Bupropion + Lozenge at 1 week post-quit. These results agree with the 2008 Public Health Service Guideline that both single and combination pharmacotherapies are effective, with combination NRT therapy being particularly effective.

These studies were conducted at the University of Wisconsin and supported by NIH Grant # R01-HL072470, Dr. Piper was supported by an institutional Clinical and Translational Science Award (UW-Madison; KL2 Grant # 1KL2RR025012-01).

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PA2-5
EFFECTIVENESS OF MOOD MANAGEMENT THERAPY AS AN ADJUNCT TO A TELEPHONE COUNSELING SMOKELESS CESSATION INTERVENTION FOR SMOKERS WITH MAJOR DEPRESSION: A RANDOMISED CONTROLLED TRIAL
Regina M. van der Meer, M.P.H.1,2, Marc C. Willemsen, Ph.D.1, Filip Smit, Ph.D.1, Pim Cuipers3, and Gerard M. Schippers3; 1STIVORO for a smokefree future; 2VU University Amsterdam; 3University of Amsterdam

Objective: Smokers with past major depression who attempt to quit smoking have a higher risk of relapsing than smokers without past major depression. This may be attributable to elevations in negative mood and depressive symptoms. These smokers may be able to quit more easily if they can better manage mood swings, and therefore a new intervention to combine telephone counseling with the addition of a self-help mood management manual. The objective of the study was to evaluate the effectiveness of this intervention. Methods: 468 smokers with a past major depression were randomly assigned to the mood management intervention (MM) or control intervention (C). The outcome measures were seven-day point prevalence abstinence, prolonged abstinence and depressive symptoms (CES-D), at 6 and 12-month follow-up. Results: Seven-day point prevalence abstinence rates for the MM and the C condition were 31.0% and 24.0%. 6-month OR was 1.39 (95%CI 0.95-2.03), 12-month OR was 1.22 (95%CI 0.82-1.88). Prolonged abstinence rates at 6-month and 12-month follow-up for the MM condition were 30.5% and 25.9%, respectively, and for the C condition were 22.3% and 14.0%. 6-month OR was 1.55 (95%CI 1.03-2.34), 12-month OR was 1.96 (95%CI 1.23 — 3.14). In the MM condition, 49.0% and 43.6% of the participants had depressive symptoms at 6-month and 12-month follow-up, respectively. For the C condition this was 39.3% and 41.3%. The 6-month OR was 0.72 (95%CI 0.50-1.03) and the 12-month OR was 0.97 (95%CI 0.68-1.41).

Conclusion: Mood management therapy as an adjunct to telephone counseling for smoking cessation seems to increase success rates for smokers with past major depression. Contrary to our expectations, this effect was not mediated by reductions of depressive symptoms.

This study was funded by the Netherlands organisation for health research and development (ZonMW).

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PA3-1
DISCOVERY OF NOVEL SUBTYPE-SELECTIVE NICOTINE RECEPTOR ANTAGONISTS AS POTENTIAL THERAPEUTIC AGENTS FOR SMOKE CESSATION
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The nicotinic receptor (nACHR) antagonist, N,N'-dideoxy-1,12-dibutyl-3-picolinium dibromide (bPiDDB), orthostatically inhibits (IC50=2nM; Imax=64%) nicotine (NIC)-evoked striatal dopamine (DA) release and decreases NIC self-administration, but does not decrease NIC's discriminative stimulus properties in rats. However, toxicity emerged with repeated bPiDDB treatment. The current study determined effects of a bPiDDB analog, N,N-decane-1,10-dibutyl-3-picolinium diiodide (bPiDI), bPiDI inhibited NIC-evoked DA release (IC50=180 nM, Imax=60%). Schild analysis showed a rightward shift in the NIC concentration-response and surmountability; however, Schild regression slope was significantly different from 1.0, suggesting competitive allosteric inhibition. To assess bPiDI interaction with alpha-containing nACHRs, slices were exposed to maximally effective (α4β2) agonist (0.2-6 µmoles/kg) reduced NIC self-administration at doses that did not alter sensitivity of NIC-evoked DA release. These preclinical results support our approach towards developing subtype-selective, nACHR antagonists as potential therapeutic agents for smoke cessation.

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PA3-2

BEHAVIOURAL STUDIES WITH THE ACTIVE METABOLITE HYDROXYBUPROPION ON THE POSITIVE REINFORCING AND AVERSIVE STIMULUS PROPERTIES OF NICOTINE IN RATS

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Preclinical studies with bupropion in rodent models of nicotine dependence have generated equivocal findings with regards to translating the clinical efficacy of the antidepressant as a smoking cessation agent. Given that rats are poor metabolisers of bupropion, the present experiments examined hydroxybupropion, the major active metabolite on the positive reinforcing and aversive stimulus properties of nicotine in rats. In male hooded Lister rats, hydroxybupropion (0.3-10.0 mg/kg IP) administered 20 min prior to each intravenous nicotine (0.03 mg/kg/inf) self-administration session for 3 sessions attenuated nicotine intake in a manner similar to that produced by mecamylamine pretreatment (1.0 mg/kg SC). In contrast, using the conditioned taste aversion procedure to assess the aversive stimulus properties of nicotine, a function implicated in the regulation of nicotine intake, hydroxybupropion (1, 3 & 10 mg/kg IP) pre-treatment failed to modify the aversive effects produced by a small dose of nicotine (0.1 mg/kg SC). These results suggest this metabolite may modify the positive reinforcing effects via mechanisms not related to blockade of nicotinic receptors, since the aversive effects of nicotine remained unaffected by hydroxybupropion pre-treatment. The ability of the metabolite to reduce nicotine-taking behaviour may help to explain the clinical efficacy of bupropion as a smoking cessation agent.

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PA3-3

ADOLESCENT VS. ADULT DIFFERENTIAL NEUROCHEMICAL RESPONSE TO ACUTE NICOTINE CHALLENGE IN RATS

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Adolescence is a period of high risk for the onset of tobacco addiction. In rat models, increased nicotine self-administration has been seen with adolescent vs. adult onset. Differential response to nicotine (0.13 mg/kg as of the base weight) across this critical age span may help explain the increased nicotine self-administration rates seen with adolescent onset. We studied acute nicotine effects on dopamine (DA), norepinephrine (NE) and serotonin (5HT) in the nucleus accumbens and frontal cortex of adolescent (6 week old) and young adult (10-week-old) male and female Sprague-Dawley rats (N=8/sex/nicotinetreatment group). DA levels in the nucleus accumbens were significantly higher in adults than adolescents after nicotine, whereas there was no age-related difference without nicotine challenge. In the frontal cortex there was a complex significant 3-way interaction with a reversal by nicotine administration of the sex x age difference in which without nicotine adult males have more DA than adolescent males while females do not differ across from adolescent to adulthood. With nicotine the females take on the male pattern of age differences and the males take on the female pattern. NE levels were significantly higher in adults in both the accumbens and frontal cortex regardless of nicotine condition and sex. 5HT levels in the accumbens were significantly increased by nicotine as a main effect. There was a significant nicotine-induced increase in SHT in adults but not in adolescents. Frontal cortical SHT was not found to be significantly affected, by sex or nicotine. This study found decreased responsiveness of adolescents to nicotine-induced increases in nucleus accumbens dopamine and serotonin levels. This decreased neurochemical responsivity of adolescents to a fixed dose of nicotine may be related to the increases in nicotine dose levels they seek in the self-administration paradigm.

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PA3-4

DELETION OF THE BETA4 NICOTINIC RECEPTOR SUBUNIT ENHANCES TOLERANCE DEVELOPMENT FOLLOWING CHRONIC NICOTINE TREATMENT

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Chronic exposure of mice to nicotine results in tolerance development and elicits increases in nicotinic receptors, a phenomenon that is termed upregulation. The extent of upregulation varies among receptor subtypes, and it is well established that this response is most robust for the alpha8beta2 subtype that can be measured by high affinity agonist binding. Previous work from our laboratory reported that beta2 null mutant mice, which express no detectable high affinity nicotine binding sites and which are initially less sensitive to acute nicotine administration, become more sensitive to an acute challenge dose of nicotine following chronic nicotine administration (McCallum et al., Psychopharmacology 184:314-327, 2006). This observation suggests that nicotinic receptors other than the widely expressed alpha8beta2 subtype mediate aspects of nicotine tolerance, perhaps eliciting supersensitivity. In order to investigate the possible role of beta4 containing subtypes on tolerance development and receptor regulation, mice differing in expression of the beta2 subunit (wild-type, heterozygotes and null mutants) were exposed to nicotine for 14 days in a single dose of 0.13 mg/kg as of weight. After chronic nicotine treatment there was significantly enhanced acute nicotine sensitivity in the beta2 null mutants compared to the wild type mice. These findings suggest that the nicotinic receptor beta2 may alter distinct aspects of nicotine sensitivity that are differentially regulated by beta2 null mutation.

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PA3-5

OVERSHADOWING AND BLOCKING OF APPETITIVE CONDITIONING BY THE INTEROCEPTIVE STIMULUS EFFECTS OF NICOTINE

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Environmental stimuli that co-occur with tobacco use can evoke drug-conditioning responses (CRs) that facilitate use and relapse. In that situation, nicotine serves as an interoceptive stimulus (US). We have shown that nicotine can also function as a conditional stimulus (CS) for non-drug USs prompting the question of whether the CS properties of nicotine can compete with the environmental CSs for conditioned excitation. We conducted an overshadowing and a blocking experiment to assess whether such competition occurs. Male rats were prepared with jugular catheters. We used a dose of nicotine known to maintain self-administration (0.03 mg base/kg/infusion). In the Overshadowing study there were 4 groups: nicotine+light compound paired with sucrose (NL+),nicotine-compound-unpaired with sucrose (NL), nicotine-light compound unpaired with sucrose (NL-), nicotine paired and light unpaired with sucrose (NL+L-), and nicotine unpaired and light paired with sucrose (N+L-). In each 2-h session, there were 16 paired stimulus presentations (light and nicotine). 30 s after stimulus onset, 4 s acoustical seizure stimulus was paired. Unpaired stimuli were temporally separated from sucrose. The stimuli were 30-s illumination of a houselight, 1-s nicotine infusion, or a compound composed of the two elements. Following training, tests of nicotine and light alone were conducted by interpolating non-reinforced trials into a training session. Excitatory training with one element did not generalize to the unpaired element. Responding to the light in the NL+ group was reduced relative to the NL- group (i.e., overshadowing). In the Blocking study there were 3 groups: nicotine paired with sucrose before nicotine-light training (N+NL), nicotine unpaired with sucrose before nicotine-light training (N-NL), and nothing before nicotine-light training (ONL+). Tests of nicotine and light alone were again conducted. Proportion of total responding to the elements was reduced on light trials in the N+NL group compared to the other groups (i.e., blocking). These findings suggest that the interoceptive stimulus effects of nicotine compete with exteroceptive stimulus thus altering the associative strength of environmental stimuli.

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Impulsivity has been defined as “a predisposition toward rapid unplanned reactions to internal or external stimuli with diminished regard to the negative consequences of these reactions to the impulsive individual or others.” In factor analyses, impulsivity has been found to fractionate into two or more domains that involve decision-making (including delay discounting) and response disinhibition (involving rapid and inaccurate responding) domains. We have incorporated assessments of impulsivity and fMRI measures of cognitive control (using the Stroop color-word interference task) into behavioral therapy trials for individuals with ADHD. Among adults with cocaine dependence, brain activation in ventromedial prefrontal cortex and striatum during Stroop performance at treatment onset correlated with cocaine abstinence and dorsolateral prefrontal cortical activation correlated with treatment retention. Within the same subjects, out-of-magnet measures on the Stroop and Continuous Performance Task (CPT) were correlated within specific domains (e.g., reaction time measures correlated across tasks and incongruent errors on the Stroop correlated with commission errors on the CPT). Consistently, measures of delay discounting and risk-taking more focally correlated with fMRI Stroop measures in regions including the insula and ventromedial prefrontal cortex, respectively. Concurrent with our studies of cocaine-dependent patients, we have been investigating in adolescent smokers the relationship between impulsivity, brain activity and behavioral treatment outcome. Preliminary results from these studies indicate that our fMRI paradigms activate similar regional networks in the adolescents as in adults and that impulsivity measure correlates with activations in cortico-striatal circuitry.

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### PA4-2

**DOES DELAY DISCOUNTING PLAY AN ETIOLOGICAL ROLE IN SMOKING OR IS IT A CONSEQUENCE OF SMOKING?**

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Delay discounting describes the tendency to discount the value of a reward as a function of the length of delay to its delivery. Higher delay discounting rates have been linked to cigarette smoking. Little is known about the stability of delay discounting (state versus trait), whether delay discounting promotes smoking acquisition, or whether smoking contributes to impulsivity deficits, or if different relationships exist in different subgroups. This study sought to fill these gaps within a prospective longitudinal cohort study (N=988) spanning mid adolesence to young adulthood (age 15 to 21 years old). Smoking and delay discounting were measured across time. Covariates included peer and household smoking, academic performance, depression, and alcohol and marijuana use. An associated processes Latent Growth Curve Model (LGCM) with paths from delay discounting level and trend factors to the smoking trend factor fit the data well, chi-square(16, N=988) = 13.36, p=.05, CFI=1.00, RMSEA=0, WRMR=.37. The model revealed that the average delay discounting trend did not change significantly from baseline. Baseline delay discounting trend was positively related to the smoking trend (b=.09, p=.56). A standard deviation (SD=1.41) increase in baseline delay discounting resulted in a 13% increase in the odds of smoking uptake. In non-smoking adolescents (N=988) SD of delay discounting was 1.22; (p<.01). The effect of delay discounting trend on smoking trend was not significant. The alternative path LGCM revealed insignificant paths from smoking level and trend to delay discounting level and trend (p > .05). Growth Mixture Modeling identified three smoking trajectories: non-smokers, early smoking adopters, and slow smoking adopters. Delay discounting was higher in the smoking versus non-smoking trajectories, but did not distinguish between the smoking trajectories, despite different acquisition patterns. Delay discounting could provide a variable by which to screen for smoking vulnerability. Adolescents at higher risk of smoking due to higher delay discounting may be a subgroup to target for more intensive smoking prevention efforts that include novel behavioral components directed toward aspects of impulsivity.

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### PA4-3

**BEHAVIORAL AND PHARMACOLOGICAL ANALYSIS OF METHYLPHENIDATE-INDUCED INCREASES IN CIGARETTE SMOKING: FINDINGS FROM THE HUMAN LABORATORY**

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Simulants increase smoking in humans. This relationship is a matter of public health concern given that the extent of smoking-related morbidity and mortality is directly related to the amount and duration of cigarette smoking and also given the high concordance between stimulant use disorders and nicotine dependence. The pharmacological and behavioral factors that contribute to stimulant-induced increases in smoking are unknown. A series of studies in our laboratory have begun to elucidate both the pharmacological and behavioral mechanisms that mediate methylphenidate-induced increases in smoking. Methylphenidate is a stimulant often prescribed for the treatment of ADHD. In the first experiment, the effects of methylphenidate were assessed on smoking. Participants in this study were given a pack of their preferred brand of cigarettes 1-hour after methylphenidate administration and were allowed to smoke ad libitum for four-hours. This 4-hour period was video-recorded and later scored for various smoking behaviors. Carbon monoxide levels, subjective effects, caloric intake and cardiovascular measures were also recorded. Methylphenidate dose-dependently increased smoking. In a series of subsequent studies that used nearly identical procedures the following questions are addressed: 1) what are the potential pharmacological mechanisms, 2) does rate-of-effect of drug effects influence the effects of methylphenidate on smoking, 3) does methylphenidate increase the reinforcing efficacy of smoking, and 4) does methylphenidate increase smoking in persons diagnosed with ADHD? Findings from these studies: 1) support the notion that methylphenidate-induced increases in smoking result from an interactive effect of nicotine and methylphenidate on extra cellular dopamine levels in brain reward areas; 2) rate-of-onset generally does not modulate the effects of methylphenidate on smoking. 3) methylphenidate increases the reinforcing effects of smoking; and 4) methylphenidate increase smoking in ADHD diagnosed individuals.

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### PA4-4

**ACUTE NICOTINE EFFECTS ON IMPULSIVITY IN ADULT ADHD AND CONTROL SUBJECTS**

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The strong association between ADHD and cigarette smoking and the known effects of nicotine on cognition has led to interest in the role of cholinergic function in ADHD cognitive deficits. We have previously demonstrated that acute nicotine improves behavioral inhibition (motor impulsivity) in non-smoking adolescents and young adults with ADHD. This study examined the specificity of these findings by examining the acute effects of both nicotine and mecamylamine (a nicotinic antagonist) on behavioral inhibition in non-smoking young adults with ADHD-C and healthy controls. 27 non-smoking young adults (15 healthy controls and 12 young adults with ADHD-C) received acute nicotine (7 mg patch for 45 minutes), mecamylamine (20 mg oral) and placebo on separate days. The Stop Signal Task was used to assess behavioral inhibition with the Stop Signal Reaction Time (SSRT) as the primary outcome variable. In the ADHD group, but not the control group, nicotine administration was associated with a significant (p<.05) improvement of SSRT. In contrast, mecamylamine was associated with a trend (p<.10) toward impairment of SSRT in the control group but not the ADHD group. These findings taken together with recent data to suggest a relationship between SSRT and behaviors which place people at risk for smoking (i.e. impulsivity, risk taking) suggest that nicotinic effects on cognition may be useful to more fully understand the vulnerability to smoking among individuals with ADHD.

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PA5-1
MULTI-LEVEL PREDICTORS OF SUCCESSFUL QUITTING BEHAVIOR AMONG ADOLESCENTS IN COMMUNITY-BASED SMOKING CESSATION PROGRAMS

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Background: Most work evaluating youth cessation treatment has been limited to research settings. The Helping Young Smokers Quit (HYSQ) initiative conducted the first longitudinal analyses of predictors of cessation success within community-based programs. The primary goal of this study was to determine individual, program, and organizational level characteristics associated with success.

Methods: Baseline interviews with 858 youth smokers enrolled in one of 41 community-based smoking cessation programs across 18 states in the US were conducted; follow-up surveys were completed at end-of-program, 6 months and 12 months. Program characteristics, program providers and organizational leaders provided information about program format, content, provider characteristics, and organizational policies. Archival data collection and community leader interviews provided information on community context and policies related to youth smoking. Multi-level, multivariate models were developed to analyze participant, site-level (program, provider, and organization), and community-level characteristics associated with a) 7-day abstinence at end-of-program, b) serious quit attempts at end of program (any vs. none), and c) 30-day abstinence at 12-months after baseline.

Results: In the multi-level models, amount smoked, measures of addiction, and confidence about quitting were among the significant baseline correlates of end-of-program abstinence. Among serious attempters, voluntary or involuntary youth enrollment was unrelated to outcomes at end-of-program and 12-month follow-ups. Variables related to program, provider and organization level characteristics were not associated with short-term abstinence, but program length and provider experience were related with making serious quit attempts at end-of-program and 30-day abstinence at 12 months. Community characteristics, including ordinances that limit tobacco advertising and youth possession or use of tobacco were important correlates of each outcome.

Discussion: This is the most comprehensive study to date to analyze the relationships between individual, program and community-level characteristics and quitting behavior of youth smokers in community-based cessation programs.

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PA5-2

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Purpose: To examine (a) gender differences in the prevalence of tobacco, alcohol and marijuana use, (b) changes in marijuana and alcohol use prevalence by smoking status, (c) the relationship between age of first use for tobacco, marijuana and alcohol use, and (d) changes in the use of these substances between 2002, 2004 and 2006 using nationally representative samples of Canadian Youth.

Methods: Data were collected from students in grades 7 to 9 as part of the Canadian Youth Smoking Survey (n=19,018 in 2002; n=29,243 in 2004; n=27,030 in 2006). Gender specific analyses were performed to examine prevalence of use, age of onset, co-morbid substance use and changes over time.

Results: Rates of ever use of tobacco were similar for males and females, and although the prevalence of ever use has decreased since 2002, the prevalence of ever use increased between 2004 and 2006. Rates of marijuana use follow a similar pattern as tobacco use, although rates of ever use are higher among males. Rates of alcohol use are higher among males; however, overall rates of alcohol use have decreased between 2004 and 2006 following a substantial increase in use between 2002 and 2004. Co-morbid substance use was very common, and it was rare to find youth who had used tobacco who had not also used alcohol and/or marijuana.

Conclusions: The data presented here suggest that tobacco, alcohol and marijana continue to be used by a substantial number of Canadian youth despite age and legal regulations prohibiting their use. Considering the high rates of co-morbid substance use and that youth are substantially more likely to use tobacco if they have also tried alcohol, highlights a limitation of much of the current youth tobacco control programming. A more comprehensive poly-substance approach to youth tobacco control prevention programming may be required.

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PA5-3
EXPECTANCIES AND ADOLESCENTS’ ACUTE NEGATIVE AFFECT CHANGE FOLLOWING SMOKING: IS THERE A FEEDBACK LOOP?

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Mood benefits have long been implicated in smoking, but there is a dearth of research on adolescents’ mood benefits following smoking. The magnitude of adolescents’ negative affect (NA) change following smoking may be important in understanding smoking progression. This study used ecological momentary assessments to examine adolescent smokers’ real-time reports of mood during smoking events to test: 1) potential predictors of the magnitude of NA change following smoking including cognitive factors (i.e., expectancies about the acute mood benefits of smoking), background influences (i.e., sensation seeking, parental smoking), and current smoking behavior (i.e., current level of smoking, dependence, self-reported subjective smoking experience); 2) the degree to which the magnitude of NA change following smoking predicts changes in future expectancies; and 3) whether expectancies predict the magnitude of future NA change following smoking. Participants were 234 9th and 10th graders (54% female) who recorded, on hand-held PDAs, at least one smoking event during 7 days of data collection at baseline and 6 months. NA was assessed with a series of adjectives rated on a 10-point Likert scale both before and after smoking. NA change was the difference in scores from post-pre. Standard hierarchical regressions were used to examine the relationship of key variables to the magnitude of NA change following smoking. Results indicated that the magnitude of NA reduc- tion following smoking was associated with expectancies (p < 0.05), current unpleasant smoking experience (p < 0.01), and number of days smoked in the last 30 days (p < 0.001). As expected, greater reductions in NA following smoking predicted increases in expectancies assessed several months later (p < 0.001). In addition, higher levels of reported expectancies predicted greater NA decreases following smoking (p < 0.05). These results indicate a possible feedback loop model of NA change following smoking and expectancies in adolescents. Furthering our understanding of the relationship between adolescents’ acute NA change following smoking and expectancies may help increase our understanding of dependence.

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teens, few have been able to match the success rate found in quitting programs designed for adults. Although the reason for this discrepancy is not clear, teenagers may differ from adults in their knowledge or acceptance of effective quitting strategies. The purpose of this report is to identify the smoking cessation strategies that adolescents use spontaneously (i.e., without prompting from a cessation program). Participants were 161 high school students caught with tobacco at school. All were offered enrollment in exchange for reduced school sanctions. The students averaged 16 years of age, with 76% male and 58% Caucasian. Over 62% of the teens smoked daily, with 84% having previously attempted quitting or cutting down on cigarette smoking. As part of the overall study, the youth were asked to identify which of a total of 26 potential strategies for quitting they had used during the course of the study. For example, the adolescents were asked about their utilization of common strategies such as information gathering, social and professional support, and replacement activities, as well as more effective, yet underutilized strategies such as stimulus control. Our results suggest that teens use a number of strategies in their unaided attempts to stop smoking. For example, 56% of the students reported increasing exercise during a quit attempt, and 64% used substitutes (e.g., toothpicks) for sensory stimulation. Most (83%) of the teens attempted to cut down their smoking slowly, and social support was apparently important to them as they tried to quit. Fully 62% of the teens talked to their friends about quitting and 40% talked with their parents. Nonetheless, the youth did not use a number of smoking cessation strategies that are known to be quite effective. For example, they made little attempt at stimulus control, so that only 14% attempted to avoid smoking family members and only 21% tried to avoid friends who smoked. Clearly, young smokers need further information about effective methods for smoking cessation and how these methods might be adapted to their use.

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PA5-5

SMOKING TEENS: PSYCHOSOCIAL COMPLEXITIES IMPACT INTERVENTION RESEARCH

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Adolescent smoking has been correlated with increased incidence of psychiatric co-morbidity and lower socio-economic status. As such, challenges in adolescent smoking cessation research are expected, but the scope of the challenges in community samples has not yet been described.

Methods: A parent-adolescent, three-site, randomized controlled trial comparing two behavioral smoking cessation treatments in 14-18 year old smokers, this descriptive study examined and categorized challenges that occurred to date during the research process research process using IRB reportable and non-reportable events.

Results: Events were classified yielding five major categories of concern. These included: legal issues and official sanctions (e.g., incarceration, lack of legal guardianship, repeated expulsions and truancy); major psychiatric co-morbidities and impairment (e.g., hospitalization for psychiatric issues); psychosocial complexity (e.g., lack of housing and adequate care, relationship violence, transience); illicit drug use (e.g., inpatient rehabilitation); and lack of childcare (e.g., insufficient support to have others care for child during participation in the study). These categories represent unique challenges that impact staff training, participant recruitment, consent, treatment, retention, and professional responsibility.

Conclusion: In order to identify and retain adolescent smokers into smoking cessation trials, these challenges will need to be considered. These adolescents may represent those in most need of a cessation intervention. There may be a need for additional staff and training to ensure proper support for adolescent smokers in cessation trials. Moreover, providing optimal retention strategies in future contact points and methods should be obtained due to the unstable environment of adolescents in our urban populations. Understanding challenges unique to, and inherent in, conducting adolescent smoking cessation research may help in planning and implementing future investigations.

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PA6-1

GENDER, RACE AND EDUCATION DIFFERENCES IN ABSTINENCE RATES AMONG PARTICIPANTS IN A RANDOMIZED PLACEBO-CONTROLLED SMOKING CESSATION TRIAL

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In addition to establishing the efficacy of smoking cessation pharmacotherapies, it is important to know how well these pharmacotherapies work for different subgroups of smokers. Past research suggests that women, African-Americans and people with less formal education are less likely to succeed in quitting smoking. The current study assessed gender, race and education differences in outcomes of smokers (N=1504) in a smoking cessation trial. Participants were assigned in a random, double-blind manner to: Bupropion (n=264), Nicotine Lozenge (n=260), Nicotine Patch (n=262), Bupropion+Nicotine Lozenge (n=262), Nicotine Patch+Nicotine Lozenge (n=267) and Placebo (n=189). The study comprised 876 (58.2%) women, 204 (13.6%) African-Americans, 84 (5.6%) smokers with less than a high school education, 353 (23.6%) smokers with a high school education and 1058 smokers (70.8%) with greater than a high school education. At 1 week post-quit logistic analyses revealed a significant gender by treatment interaction: women in the Bupropion+Lozenge condition were significantly less likely to be abstinent (32.5%) than men in the Bupropion+Lozenge condition (44.4%); OR=4.1; p<.04. At 6-months post-quit a main effect of gender emerged: women were less likely to be abstinent in the Nicotine Patch group than men despite less than a high school education were less likely to be abstinent at 1 week, end of treatment and 6-months, relative to White or smokers with a high school education, respectively. Regardless of treatment condition. At the end of treatment, smokers with more than a high school education had significantly higher abstinence rates than those with only a high school education. These results suggest that African-American smokers and smokers with less than a high school education have more difficulty quitting regardless of treatment and that the gender differences that emerge in the 6-month cessation rates may be related to events that occur post-treatment.

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PA6-2

A FAMILY APPROACH FOR TOBACCO CONTROL IN AFRICAN-AMERICANS

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African-American (AA) families continue to suffer disproportionate health disparities related to tobacco use and exposure. There is a paucity of research with comprehensive tobacco control approaches that include both child and adult health promotion, primary, and secondary prevention efforts. This randomized control clinical trial investigated the impact of a family approach to prevent tobacco use in children, decrease second-hand smoke exposure, promote parent’s self-efficacy with anti-tobacco socialization, and promote cessation in parent smokers. The treatment arm included concurrent smoking and home-based interventions (i.e., LifeSkills) that focused on promoting skill development for making healthy behavior choices. Additionally, cessation treatment (pharmacotherapy, and motivational interviewing) was offered to parent smokers. The control arm included the traditional health curriculum for children and a home-based component of general health education for parents. Subjects (N=279) were 4th grade children (N=136) and parents/guardians (N=143) from rural and urban settings in the southeastern United States. Children were nearly equally comprised of males (N=63) and females (N=73), with 71% residing in single-parent homes. Parents were 94% female and 50% of the parent sample reported having an annual income of $15,000 or less. Of the 132 children (57 male, 75 female) in grades 3-5, 121 children (63 male, 58 female) in 4th grade, and 122 (65 male, 57 female) in 5th grade. Repeated measures clustered ANOVA analyses revealed significantly greater increases in LifeSkills overall knowledge (F [1, 132] = 5.16, P = 0.0248) and LifeSkills drug knowledge (F [1, 261] = 8.09, P = 0.0048) among parents compared to the control group. For parents in the intervention group, self-efficacy in creating an anti-tobacco socialization environment at home was significant (F [1, 263] = 5.81, P = 0.0166). Study results suggest that an approach that includes both school and home components occurs immediately and may be positive in promoting tobacco control in AA families.

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**PA6-3**

**THE INFLUENCE OF RISK PERCEPTION ON SMOKING CESSATION AMONG LATINO LIGHT AND HEAVY SMOKERS**

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Light smoking (<10 cpd) is disproportionately represented among Latinos (Zhu et al., 2008). High levels of risk perception are prospectively associated with smoking cessation (McKee et al., 2005; Hayes, et al., 2007), but no studies have examined: a) differences between light and heavy smokers in smoking-related risk perception and b) whether the interaction between light/heavy smoking and risk perception is prospectively associated with smoking cessation.

Objective: We examined whether increases in risk perception (perceived vulnerability (PV) to the risks smoking) and precaution effectiveness (PE, perceived diminution of risk upon quitting) prospectively predicts smoking outcomes among a Latino sample of light and heavy smokers.

Methods: Participants (N=131; M age=36.8, 73% female, M=10.8 cpd; 53.1% light smokers; 46.9% heavier smokers) were randomly assigned to receive one of two nurse-delivered smoking interventions provided over 3 home-based visits. Participants did not have to want to quit smoking to be in the study; free nicotine patches were given to those wanting to quit. Smoking outcomes (7 & 30 day prevalence abstinence (ppa)) were biochemically verified at end of treatment (EOT) and 2 and 3 months later.

Results: ITT analysis showed that increases in PE from baseline to EOT predicted 7 & 30-day ppa abstinence at both 2- and 3-month follow-ups, however, this relationship was moderated by smoker status. Light smokers were 1.34 times more likely to quit for each 1-unit increase in change of PE from baseline to EOT at the 2-month follow-up (7-day ppa: OR = 1.34, 95%CI:1.04-1.74; 30-day ppa: OR = 1.34, 95%CI:1.03-1.74) and were nearly 1.5 times more likely to quit smoking at the 3mo follow-up for each 1-unit increase in change of PE from baseline to EOT (7-day ppa: OR = 1.46, 95%CI:1.11-1.93; 30-day ppa: OR = 1.47, 95%CI:1.10-1.97). Among heavy smokers, changes in PE were not associated with subsequent smoking status. Neither changes in PV nor the interaction with light/heavy smoking predicted smoking cessation at any time point. Conclusions: Interventions designed to highlight the health benefits of quitting may be needed for Latino light smokers.

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**PA6-4**

**DIFFERENT MEASURES OF NICOTINE DEPENDENCE DO NOT OVERLAP IN AFRICAN-CANADIAN SMOKERS**

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The dimensions of nicotine dependence measures were explored in a Canadian population of black Africandescent. We assessed nicotine dependence by three measures, Diagnostic and Statistical Manual of Mental Disorders Fourth Edition (DSM-IV), International Classification of Diseases Tenth Edition (ICD-10), and the Fagerström Test for Nicotine Dependence (FTND). The different measures resulted in different diagnosis rates of nicotine dependence: 91% were dependent by DSM-IV; 48% were dependent by ICD-10; and 48% were dependent by FTND (score ≥3). However, although ICD-10 and FTND had the same diagnosis rates of nicotine dependence, they did not identify the same individuals as dependent since 35% of those who were dependent by ICD-10 were not dependent by FTND. The different dimensions of nicotine dependence may not be captured, or contribute equally, to each measure of dependence. For exploratory purposes, we expressed the DSM-IV, ICD-10, and FTND as scale measures. ICD-10 with FTND had the disease relatedness (r=0.51, p<0.001), followed by DSM-IV with ICD-10 (r=0.43, p<0.001), and DSM-IV with FTND (r=0.25, p=0.003). We also investigated the following questions: What are the most important criteria/questions in each measure for predicting the dependence score? What is the importance of individual criteria/questions relative to the others in a measure? What are the architectural sources of inter-instrument discordance? We have examined the variability among nicotine dependence measures and found that the three measures capture different dimensions of dependence, but the differences are also a result of measurement architecture. Tolerance, withdrawal, and the heaviness of smoking were important predictors of dependence measure scores in these relatively light smokers. A gaining better a control of the dimension of dependence is knowing when different measures are, or are not, exchangeable should improve their use in the field of tobacco research.

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**PA6-5**

**SMOKING BEHAVIOR AND BIOMARKERS OF EXPOSURE IN AFRICAN-AMERICAN AND WHITE SMOKERS**

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On average adult African-American (AA) smokers smoke fewer cigarettes per day (CPD) than do Non-Hispanic Whites (NHW) — 10 and 16, respectively based on NHANES data from 1999-2004. AA smokers have a higher risk of lung cancer compared to NHWs. The increased risk of cancer varies with level of cigarette consumption, with a more than two-fold increased risk in AA smokers of 1-9 cpd but no significant increased risk above 30 cpd compared to NHWs. On average AA smokers metabolize nicotine (Nic) and cotinine (Cot) more slowly and take in 30% more nicotine and tobacco smoke per cigarette compared to NHWs. As a result of slower metabolism of Cot and greater intake of Nic per cigarette, AA have substantially higher blood Cot levels normalized for cpd compared to NHWs. To explore the basis for racial differences in lung cancer risk at different levels of smoking, we examined the relationship between cpd, urine Nic metobolite excretion and the carcinogen markers NNAL and polycyclic aromatic hydrocarbons (PAH) in 120 AA and white smokers. The relationship between cpd and Nic or cotinine exposure was weaker in AA than in whites. This discrepancy was particularly true at lower levels of cigarette consumption. In contrast there was a very strong relationship between urine Nic metabolite and carcinogen biomarker excretion, which was independent of race or cpd. Both AA and white demonstrate higher Nic and carcinogen exposure per cigarette at lower levels of cpd, but this effect was much greater in AA smokers. In summary we provide evidence of racial differences in intensity of smoking and related Nic and carcinogen exposure in relation to cigarette consumption. More intense smoking among right hand Nic smokers explains, at least in part, the high risk of lung cancer in AA at low levels of cigarette consumption, and may have implications for treatment of such smokers. Why AA light smokers smoke more intensely than white light smokers and the importance of intense smoking to racial differences in nicotine dependence remain to be elucidated.

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**PA7-1**

**GENDER DIFFERENCES IN REACTIVITY TO SMOKING AND STRESS CUES**

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There is some evidence that women may be less successful when attempting to quit smoking than men. One potential contributory cause of this gender difference is differential craving and stress reactivity to smoking-related and stress-related cues. The present human laboratory study (derived from a recently completed parent investigation) investigated the effects of gender on reactivity to smoking and stress cues by exposing nicotine dependent men and women to four types of cues: 1) in vivo smoking cues, 2) in vivo neutral control cues, 3) imagery-based stressful cues, and 4) relaxing imagery control cues. Both before and after each cue exposure, women (n=37) and men (n=53) smokers provided subjective reports of craving and anxiety, and salivary cortisol responses. Results indicated that participants reported greater craving and arousal in response to smoking vs. neutral cues and greater craving, arousal, stress and unpleasantness in response to the stressful vs. relaxing imagery cues. A diminished feeling of control was also reported in response to the stressful vs. relaxing imagery cues. With respect to gender differences, women evidenced over three times greater odds of reporting higher craving in response to the stressful script and over two and half times greater odds of reporting a higher stress rating in response to the stressful imagery cues. There were no gender differences in responses to smoking cues. Since the menstrual phase status of female participants was objectively verified and determined to be uncorrelated with the craving and affect measures, the identified gender differences cannot be attributed to variation in menstrual cycle phase (i.e., follicular vs. luteal). While this study did not yield evidence of gender differences in responsivity to smoking cues, it did identify gender as a potential moderator of craving and stress reactivity to stress-related cues.

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Previous neuroimaging studies have found differences between smokers and non-smokers in the neural systems of reward in response to smoking-related cues. Smokers also show higher levels of impulsivity on self-report and behavioral measures, and impulsivity has been associated with enhanced sensitivity to immediate versus delayed rewards. The neural systems of reward involve dopaminergic (DA) projections from the ventral tegmental area (VTA) to regions of the prefrontal cortex (PFC). The current study employed functional magnetic resonance imaging (fMRI) to examine the neural systems of reward in smokers and non-smokers when monetary rewards and punishments were predicted and delivered. The task consisted of presenting cues predicting the delivery of a reward or punishment with 75% probability. Participants received feedback on how much money they won or lost on a given trial. In this ongoing study, we have collected data in four smokers and six nonsmokers (data collection will be completed in Spring 2009 and data from 10 smokers and 10 nonsmokers will be presented). Preliminary results identified an area of the PFC that responded differentially in smokers compared to non-smokers. Non-smokers but not smokers showed greater PFC activations when punishments were predicted compared to when rewards were predicted. However, this pattern was reversed during the delivery phase of the trial: smokers but not nonsmokers showed greater PFC activations when rewards compared to punishments were delivered. The results demonstrate that smokers may be more sensitive to reward delivery compared to reward prediction. The results are consistent with previous behavioral findings showing a preference for immediate over delayed reward delivery among smokers. The observed activation of the PFC to rewards and punishments extends previous research by showing a differentiation between reward prediction and delivery related to cigarette smoking. These results could inform treatment intervention, taking into account how smokers may weigh the immediate reward delivery associated with continued smoking versus positive treatment outcomes, such as long-term health benefits.

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PA7-4
ALCOHOL-ELICITED CRAVINGS TO SMOKE: CUES AND CONSUMPTION

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Research has demonstrated that exposing smokers to stimuli associated with smoking can reliably produce cravings to smoke. However, despite the abundance of research demonstrating strong associations between alcohol and tobacco use, relatively few studies have examined the effects of alcohol cues and intake on craving. The current study examined the acute effects of nicotine and alcohol on cue-elicited craving and intake in participants with a wide range of alcohol and tobacco use. Across four sessions and using counterbalancing and double-blind procedures, participants (n=60) consumed two beverages containing either alcohol or placebo, and smoked one nicotine- or denicotinized cigarette in a fully-crossed 2 x 2 design. After consuming the drinks and smoking the cigarette, a computerized cue-reactivity assessment of responding to a series of smoking, alcohol and neutral images was completed. Participants rated the images across several dimensions, though the present analyses focus on cravings to smoke. Preliminary results indicate that smokers lower in alcohol dependence (based on a median split on the alcohol dependence scale) experience greater craving to smoke in response to smoking cues, relative to alcohol cues (p < .05), whereas smokers higher in alcohol dependence experience similar levels of craving to smoke regardless of whether presented with smoking cues or alcohol cues. The cross-reactivity effects remained even when controlling for level of nicotine dependence. Furthermore, receiving alcohol (relative to placebo) did not affect cue-elicited cravings to smoke in response to alcohol pictures among low alcohol dependent participants. However, receiving alcohol increased cue-elicited craving to smoke in response to alcohol images among smokers higher in alcohol dependence (p < .05). This finding must be interpreted cautiously, as the results drop to trend significance when controlling for nicotine dependence (p < .10). Overall, the current study demonstrates a need for increased attention to the contributory role that alcohol intake and alcohol dependence may play in maintaining smoking behavior.

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PA7-5
THE EFFECTS OF ACUTE EXERCISE ON ATTENTIONAL BIASES TO SMOKING-RELATED STIMULI DURING TEMPORARY ABSTINENCE FROM SMOKING

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Visual attentional biases towards smoking-related cues, is increased during abstinence, and predicts relapse after quitting. Exercise has been found to reduce cigarette cravings and desire to smoke during temporary abstinence and attenuate increased cravings in response to smoking cues. The purpose of this investigation is to assess the acute effects of exercise on attentional bias to smoking-related cues during temporary abstinence from smoking. Following institutional ethical approval, participants (n=20) were assigned to a 15-minute treatment period of passive seating or stationary cycling following 15-hours abstinence, on separate days in a randomised cross-over design. Attentional bias was measured (EyeLink II eye-tracking system) at baseline and post-treatment. Direction and duration of gaze (dwell time) was assessed during the passive viewing of a series of paired smoking (e.g., hand holding cigarette) and neutral images (e.g., hand holding pen) images. The order and selection of images were randomised for each trial and presented for 1000ms (15 x 20 cm cards) approximately 60 cm from the participant. Self-reported “desire to smoke” was recorded at baseline, mid- and post treatment and post image viewing. A fully repeated 2-way ANOVA showed a significant condition x time interaction for dwell time on smoking-related images, F (1, 18) = 5.51, p = .031, (eta2 = .234) with a significantly longer dwell time on smoking images following the control compared with exercise treatment, 5.15 (1.35) and 4.35 (1.78) seconds, respectively. A significant interaction effect for desire to smoke, F (2,22) = 4.36, p = .029 (eta2 = .278) was also found, with significantly lower urges to smoke after exercise at all assessments post baseline. Findings support previous research that acute exercise reduces desire to smoke. This is the first study to show that exercise appears to also influence the salience and implicit wanting of cigarettes, which verifies self-appraised urges to smoke. The study provides further support for the value of exercise as an aid to stopping smoking.

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PA7-6
RESPONSES TO SMOKING CUES INCREASE WITH DURATION OF ABSTINENCE

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Most attempts at smoking cessation fail. For reasons that are not well understood, the risk of relapse continues long beyond the initial period of abstinence and withdrawal. In laboratory animals, drug-seeking elicited by conditioned stimuli increases with duration of abstinence, over periods of several months. This phenomenon, referred to as “incubation”, may parallel in humans the high rates of relapse to smoking after withdrawal, if smoking related cues fail to lose, and possibly even gain, potency over time. The present study examined the relationship between reactive to cues and duration of abstinence in regular cigarette smokers. Smokers abstained from smoking for 7, 14 or 35 days of verified abstinence, and their reactions to cues were assessed at the end of this period. It was hypothesized that reactions to the cues would increase with duration of abstinence. Non-treatment seeking daily smokers (> 10 cigarettes/day) were randomly assigned to abstain from smoking for 7, 14 or 35 days (N=15, 15, 15). Abstinence was verified daily using CO and cotinine measures. After the assigned abstinence period, participants participated in a laboratory session in which they were exposed to smoking-related and neutral images, sights and smells. Heart rate, blood pressure, mood and acute smoking cravings in response to the cues were measured across the three groups. Early analyses indicate that, as hypothesized, responses to smoking-related cues increased in relation to duration of abstinence. Smokers who abstained longer exhibited greater increases in heart rate and reported heightened cigarette cravings in response to the smoking cues. These data suggest that “incubation”, in which responses to drug-related stimuli increase with longer periods of abstinence may occur in humans, as well as the risk for relapse to smoking after withdrawal, if smoking-related cues fail to lose their potency over time. The observation has significant implications for treatment of smoking and other drug abuse in which users are protected from exposure to drug-related stimuli: It suggests that the risk for relapse may increase, rather than decrease, as the time patients are kept away from drug-related cues, increases. Funding: R21DA020773, NIH NIDA Intramural Research Program.

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PA8-2 A GLOBAL SURVEY OF PROGRAMS THAT TRAIN TOBACCO DEPENDENCE TREATMENT PROVIDERS
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Background: The WHO Framework Convention on Tobacco Control (FCTC) requires countries to implement tobacco dependence treatment programs. To provide treatment effectively, a country needs individuals trained to deliver these services. The aim of the study was to determine the extent to which tobacco treatment programs train tobacco treatment providers. This project aimed to develop a methodology for obtaining this information and to conduct an initial global survey.

Methods: Cross-sectional web-based survey of tobacco treatment programs in a stratified convenience sample of countries chosen to vary by WHO geographic region and World Bank income level.

Results: 665 medical schools from 109 countries completed the full questionnaire. A response rate of 31.8% from medical schools (39% in developed and 28% in less developed countries) and 64% of countries. A further 67 medical schools responded to a single question on whether they taught about tobacco. The total response rate was 35%. Of 561 medical schools responding to questions on teaching options, 27% of medical schools taught a specific module on tobacco control compared to only 11% in our survey of medical schools conducted a decade ago; 77% integrated teaching on tobacco with other topics compared to 40% ten years ago; 31% taught about tobacco informally as the topic arose (vs. 58%), and 4% did not teach about tobacco (vs. 12%). Most common topics taught were: health effects of smoking (39%) and written effects of tobacco (45%); epidemiology of tobacco use (81%); nicotine dependence (78%); and taking a smoking history (75%).

Conclusions: We found an encouraging increase in the extent of teaching on tobacco in medical schools over 10 years. There is still a great deal more effort required so that education on tobacco is an ongoing part of medical curricula. The teaching content is generally based on evidence based smoking cessation guidelines.

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PA8-3 UNIVERSITY OF EXCELLENCE FOR TOBACCO-DEPENDENCE TREATMENT: A TRANS-DISCIPLINARY MODEL OF FACULTY DEVELOPMENT AND CURRICULUM CHANGE AT LOMA LINDA UNIVERSITY (LLU)
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National surveys of US health professional schools show inadequate didactic and clinical tobacco-dependence curriculum. We describe the results of a discipline-specific tobacco curriculum enhancement project at LLU.

Methods: LLU received a 2-year grant to improve the tobacco-dependence education of all clinical students (2007-2009). The University Cancer Center invited the Deans of the Schools of Dentistry (SD), Medicine (SM), Nursing (SN) and Pharmacy (SP) to support tobacco-dependence curriculum evaluation and change. Each Dean assigned key faculty to match and enhance the US PHS Guidelines to their profession. After the Deans identified key faculty in each school, the investigators met with them monthly to review specific academic needs to achieve curricular change. Only 1 of the key faculty had previously attended a tobacco-dependence training course. (2 hours). SM (7 hrs) and SP (9 hrs) had identifiable, didactic tobacco education. However, only the SM offered clinical training and objectively measured student performance.

Results: Faculty (n=8) from all 4 schools joined SRNT and attended SRNT 2008. This greatly enhanced their confidence and knowledge of tobacco-dependence mechanisms and treatment. SD and SN Faculty surveys indicated widespread desire to improve tobacco-treatment knowledge and clinical training. Faculty development seminars (4 hrs) were well attended in the SD and will be held in SN and SP. SD required lecture time increased from 2 to 7 hrs. Dental and Nursing students received clinical tobacco treatment training for the first time. SM increased tobacco didactic teaching to 1 from 4 hrs. The SP revamped its didactic course, sent faculty to intensive training, and is launching a required, 1-month clinical tobacco rotation for all Yr-4 students. All schools are increasing clinical training and will evaluate graduates’ clinical competency in 2009.

Conclusions: Simple, low-budget, faculty development activities, with strong Chancellor and Deans support, initiated remarkably rapid tobacco curriculum improvement in all 4 health professional schools to prepare graduates to effectively treat tobacco dependence.

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PA8-4 ASSOCIATIONS OF MEDICAL STUDENT PERFORMANCE IN STANDARDIZED PATIENTS ON SMOKING CESSATION WITH COGNITIVE EXAMINATIONS
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Aim: To determine whether performance on a standardized patient (SP) providing smoking cessation is independent of performance on cognitive examinations.

Methods: MSU-College of Human Medicine 3rd year students participate in a required 8-week clinical clerkship in Family Medicine. The study population consists of all medical students observed in clerkships 1997-2007. From 1997 to 2002 (cohort 1), 470 students completed a performance based assessment (PBA) with a simple assessment (SP1) on standardized patients, providing the 5 A’s on smoking cessation. From 2003-2007 (cohort 2), a total of 508 students took a revised, complex based assessment (SP2) involving a “shared-decision making” process on smoking cessation and general preventive care more consistent with usual clinical practice. Both cohorts were evaluated on the PBA and their cognitive performance (written, oral, multiple-choice exams) using the performance on standardized patients (SP1 or SP2).

Results: We found a positive unadjusted statistical association between SP1 performance and the multiple-choice exam (p<0.05) for cohort 1 but not for cohort 2. Conversely, a statistical, crude association was found for SP2 and the oral exam (p<0.05) for cohort 2 but not for cohort 1. The associations for the SP remained statistically robust after controlling for campus and clerkship sequence. Comparing cohorts 1 and 2 (SP1 versus SP2) on their smoking PBA assessment, we found no performance difference.

Conclusions: Medical student performance on a standardized patient, providing smoking cessation counseling, is not consistently associated with performance on cognitive examinations. Performance during a clinical clerkship of smoking cessation counseling did not differ by student cohorts given a simple standardized case on smoking cessation versus more complex cases requiring shared decision-making on preventive care as well as smoking cessation.

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PA8-5  
SMOKING CARE POLICIES AND PROCEDURES IN AUSTRALIAN PSYCHIATRIC FACILITIES

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Tobacco smoking is the leading preventable cause of death and disease in Australia. Despite a reduced smoking prevalence within the general population (20%), a high prevalence remains for psychiatric inpatients (70-90%).

Objective: This study aimed to identify (1) smoking policies and procedures in public psychiatric inpatient units in New South Wales (NSW), Australia; (2) smoking care in such units; and (3) policies and procedures associated with the assessment of smoking status and provision of smoking care.

Method: A cross-sectional survey was mailed to all public psychiatric inpatient units in NSW for completion by Nurse Unit Managers.

Results: Of the 131 units, 123 completed surveys were returned (94%). Over one third (36%) of respondents reported instances of inpatients commencing smoking during their admission. A similar proportion (39%) reported that some smoking patients were provided with cigarettes when their own supply was expended. While 50% of respondents reported that all patients were assessed for smoking status, 70% reported that nicotine dependence was not assessed. Respondents who reported that staff adhered to smoking restrictions had three times the odds of assessing patient smoking status compared to those who reported never doing so (OR = 3.0, df = 1, p = 0.01).

Conclusions: Inadequate reinforcement of non-smoking environments and inconsistencies in smoking care procedures were apparent. The findings suggest that the failure of psychiatric services to provide smoking care is systemic and not related to particular types of services.

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PA9-1  
COMMUNITY-BASED YOUTH CESSATION PROGRAMS: CHARACTERISTICS OF SUSTAINING PROGRAMS


Although substantial resources are spent to implement community-based health programs, they often do not continue beyond initial funding. Identifying factors that support program sustainability is vital to ensuring that best treatment practices are available for youth smokers. To investigate sustainability, the Helping Young Smokers Quit initiative attempted to retrospectively reassess 591 programs three years after they were included in a national survey of community-based youth cessation programs. The follow-up survey measured 5 constructs of sustainability: Organizational Alignment/Integration, Resources, Standard Operating Procedures, Demand, and Local Ownership. This paper examines characteristics of sustained programs by comparing their baseline and follow-up reports. A total of 305 programs (52% of the original sample) were located and completed follow-up surveys. Of the 305, 188 were still in operation. Most sustained programs were school-based, offering cognitive-behavioral interventions in a group format. Since first offered, 37% transitioned from trial status to permanent programs, and 20% were temporarily suspended. Primary reasons for suspending operations were: not having a program leader, lack of funds, and too few youth enrolled. Over the three years since baseline, sustained programs reported changing enrollment criteria with a decrease in mandated-only participation. Among programs initially reporting mandatory-only enrollment, 63% subsequently opened up enrollment to any interested youth. There were also significant changes in the type of program used; 38% of those using internally developed programs at baseline were using externally developed programs at follow-up. That only 32% of the original programs could be located and were found to be in operation suggests significant volatility in the availability of community-based youth cessation programs. Results point to the relevance of organizational alignment/integration (e.g., transition from pilot to permanent program status), standard operating procedures (e.g., adoption of standardized programs), and demand (e.g., expanded eligibility criteria) to program sustainability.

The Helping Young Smokers Quit initiative is supported by the Robert Wood Johnson Foundation, National Cancer Institute, and Centers for Disease Control and Prevention.

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PA9-2  
COMPARING THE 5 A’S VS. 3 A’S PLUS QUITLINE COUNSELING IN FEE-FOR-SERVICE DENTISTRY

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Study Purpose: The primary aim of our study was to evaluate the relative efficacy of two dental office-based interventions compared to usual care in a randomized clinical trial for patients who use tobacco.

Methods: The 3 A’s condition consisted of a combination of dental practitioner advice to quit plus referral telephone counseling, and the 5 A’s consisted of an intervention based on the Clinical Practice Guideline. Participants were assessed at 3 and 12 months.

Results: 2,160 tobacco-using patients were enrolled from 68 private dental practices in Mississippi. The majority was: smokers (79%); male (80.5%); female (60%); some college education (60%). There were significant differences between groups on prolonged abstinence, with participants in the intervention conditions more likely to report quitting than those in usual care (D2 = 1.2160 = 4.5, p<0.05).

Although not significant, more patients in the 5 A’s condition reported quitting than those in the 3 A’s condition. Only 16.3% of smokers in the 3 A’s Condition reported receiving quitline counseling: 7% of those who reported prolonged abstinence vs. 1.9% of those who did not receive counseling (p<0.01).

Conclusions: These results suggest that there are advantages and disadvantages of using quitlines as an adjunct to dental interventions. Patients receiving telephone counseling quit at higher rates than those who did not, but only a small percentage of patients got counseling. Dental professionals may be more effective in helping their patients quit by regularly providing the 5 A’s plus referring only patients who are highly motivated to a quitline for more intensive counseling.

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PA9-3  
EFFECTIVENESS OF A SMOKING CESSATION SERVICE IN PRIMARY CARE

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Background: General practice nurse involvement in providing smoking cessation advice has not been evaluated in the Australian context.

Objectives: To evaluate the enhanced role of general practice nurses offering smoking cessation advice.

Methods: Two divisions of general practice in southwestern Sydney participated. Following a half-day training workshop for practice nurses, participating general practices each identified 25 patients to be advised to quit by the nurse over four visits. Patients were offered counselling and subsidised nicotine replacement therapy (patch). Evaluation consisted of point prevalence and continued abstinence six months after quit day and satisfaction with the service model.

Results: 35 general practitioners and 31 practice nurses from 23 general practices participated. Outcome data was collected from 498 patients. Mean age of patients was 46 years with 61% female. 83% decided to quit. Mean number of visits to the practice nurse was 2.8 out of a possible 4. At six months, point prevalence was 22% and continuous abstinence was 16%, with validation using carbon dioxide measurement. 95% used NRT and 46% the Quitline. Cost per quitter was estimated at AUD$1074. Qualitative evaluation through interviews with 22 practice nurses and 11 general practitioners revealed positive feedback about the enhanced role.

Conclusion: Practice nurses have considerable potential for improving the amount and quality of behavioural risk factor advice offered in primary care.

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PA9-4  
COMMUNITY LEVEL IMPLEMENTATION OF THE CENTERS FOR DISEASE CONTROL AND PREVENTION BEST PRACTICES RECOMMENDATIONS FOR EFFECTIVE TOBACCO CONTROL  
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The Centers for Disease Control and Prevention (CDC) developed and recently updated recommendations for comprehensive and effective tobacco control in the United States. These recommendations include the implementation of activities at the community level that prevent initiation of and promote cessation of tobacco use, eliminate exposure to secondhand smoke, and eliminate existing health disparities among diverse populations. In 2000, the Paso del Norte Health Foundation in El Paso, Texas implemented a tobacco control initiative at the community level in line with the CDC’s best practices. To examine the impact of this initiative, smoking prevalence estimates were attained for the county of El Paso, TX, the state of Texas, and U.S. national estimates for the past 10 years (1997 – 2007) from annual Behavioral Risk Factor Surveillance System surveys. Estimates were compared at the county, state, and national level prior to and after 2000 when the initiative was enacted in El Paso only. Initiative impact on smoking prevalence was tested with the median test with exact probability to account for the small sample size (N = 10 time points). At the local level, rates after the introduction of the initiative were significantly below the median smoking rate across years (p = .81, exact p = .03). At the state and national levels, there were no comparable significant associations (both exact ps > .40). While the prevalence of smoking has decreased in all three strata from 1997-2007, it appears that the decline was more extensive (from 28% to 18%) at the El Paso county level relative to Texas and national declines. This lends support to the necessity of implementing CDC recommendations for effective tobacco control at not only the state and national levels, but also the community level. With the strengthening of the initiative since 2007 and the adaptation of the initiative in 2008 to the updated CDC best practices guidelines, the tobacco use prevalence reductions already observed in El Paso, TX are anticipated to continue.

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PA9-5  
PHARMACY AND GROUP-BASED INTERVENTIONS FOR SMOKING CESSATION: WHAT WORKS FOR WHOM IN WHICH CIRCUMSTANCES?  
L. Baud, J. Ferguson, J. Chesterman, and K. Judge

Limited evidence exists regarding the efficacy of different models of pharmacist support for smoking cessation, particularly in community settings. This paper outlines results from an observational study that compared pharmacy-based one to one support with group-based support in Glasgow, Scotland. The study collected detailed data from 1,700 smokers accessing these two types of services within a 10-week period in 2007. In the short term, clients accessing group services were more than twice as likely to be abstinent at four weeks than those using pharmacy support, even after controlling for a wide range of client and service characteristics. In the longer term, at one year, the differences in outcomes between services were not as significant but group support still outperformed the pharmacy model. The study also found, as previous research has done, that a range of client characteristics including age, level of addiction, health status and other factors affected outcomes. The study concludes with a discussion of implications for policy, practice and future research in the UK and further afield.

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PA10-1  
COMPARING THE EFFECTS OF ENTERTAINMENT MEDIA AND TOBACCO MARKETING ON YOUTH SMOKING IN THE U.S.  
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Objectives: To examine the concurrent effects of exposure to movies and tobacco marketing on adolescent smoking onset and progression. Methods: Cross sectional study of 4524 Northern New England adolescents aged 10-14 in 1999 with longitudinal follow up of 2001 and 2007. Limited evidence exists regarding the efficacy of different models of pharmacist support for smoking cessation, particularly in community settings. With the strengthening of the initiative since 2007 and the adaptation of the initiative in 2008 to the updated CDC best practices guidelines, the tobacco use prevalence reductions already observed in El Paso, TX are anticipated to continue.

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Results: In the cross-sectional sample, 17.5% had tried smoking. Movie smoking and marketing receptivity were both associated with trying smoking, but adolescents who experienced both exposures were more likely to try smoking compared to adolescents with only one exposure. Movie smoking预案 was associated with a higher level of lifetime smoking among 794 experimenters. For the longitudinal analysis, the only outcome that showed a significant difference between the two levels of exposure was the likelihood of trying smoking at T1. Those who were exposed to movies were more likely to try smoking at T1.

Conclusions: In this study, exposure to movie smoking was a stronger predictor of trying smoking compared to tobacco marketing receptivity. Among experimental smokers, attention to tobacco marketing was common and strongly associated with higher levels of lifetime smoking. The results suggest that the exposures act at different levels in the smoking uptake continuum. Both exposures deserve equal emphasis from a public health standpoint.

NIH CA-77026, American Legacy Foundation.

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PA10-2  
COMPARING THE EFFECTS OF ENTERTAINMENT MEDIA AND TOBACCO MARKETING ON YOUTH SMOKING IN GERMANY  
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Objective: Examine the differential effects of movies and tobacco marketing in Germany, where there are fewer controls on tobacco advertising compared to U.S.

Method: Longitudinal study of 5,811 German adolescents aged 10-14 at T1; 4603 were resurveyed 1 year later and of whom 4,384 have complete data for the analysis. A lifetime smoking/current smoking outcome variable (smk) was constructed from two items (alpha = 0.87, range 1-5). Exposure to smoking in 398 internationally distributed U.S. movies was modeled as a continuous variable, with 0 corresponding to 5th percentile and 1 to 95th percentile of exposure. Tobacco marketing receptivity consisted of naming a brand for favorite tobacco ad. The ordinal logistic regressions controlled for sociodemographics, other social influences, personality characteristics of the adolescent and parenting style.

Results: Ever smoking prevalence was 38% at T1 and mean for smk was 1.65 and 1.81 at T1 and T2, respectively. Whereas 34% of experimental smokers were receptive to tobacco marketing at baseline, only 6% of never smokers were. In an unanalytic model, the interaction of movie smoking and tobacco marketing receptivity on ever-smoking at T1 were both statistically significant at the p < 0.05 level. Among baseline never smokers, exposure to movie smoking was a strong predictor of higher T2 lifetime smoking (adjusted proportional odds ratio [apor] 2.84 [1.90, 4.26]) but tobacco marketing receptivity was not (apor 1.48 [1.04, 2.1]; in post hoc testing, the movie estimate was significantly higher than the marketing estimate. Among baseline experimental smokers, tobacco marketing receptivity was a strong predictor of higher T2 lifetime smoking (apor 2.22 [1.83, 2.70]) but exposure to movie smoking was not (apor 1.60 [1.16, 2.20]).

Conclusions: In this longitudinal study movie smoking primarily affected smoking initiation and tobacco marketing receptivity primarily affected experimental smoking. The results suggest that movie smoking should be emphasized in programs aimed at preventing onset and marketing emphasized in programs directed at experimental smokers. Both deserve equal attention from a public policy standpoint.

This work supported by the Ministry of Health of the Federal Republic of Germany: NIH CA-77026 and The American Legacy 2603 baseline never smokers. For cross-sectional analyses, outcomes included ever tried smoking and higher level of lifetime smoking among 794 experimenters. For the longitudinal analysis, the outcome was onset of smoking among baseline never smokers two years later. Movie smoking exposure was modeled as one four population quartiles, tobacco marketing receptivity included two levels — having a favorite tobacco ad and wanting/owning tobacco promotional items. All analyses controlled for sociodemographics, other social influences, personality characteristics of the adolescent and parenting style.

Results: In the full cross-sectional sample, 17.5% had tried smoking. Movie smoking and marketing receptivity were both associated with trying smoking, but adolescents who experienced both exposures were more likely to try smoking compared to adolescents with only one exposure. Movie smoking预案 was associated with a higher level of lifetime smoking among 794 experimenters. For the longitudinal analysis, the only outcome that showed a significant difference between the two levels of exposure was the likelihood of trying smoking at T1. Those who were exposed to movies were more likely to try smoking at T1.

Conclusions: In this study, exposure to movie smoking was a stronger predictor of trying smoking compared to tobacco marketing receptivity. Among experimental smokers, attention to tobacco marketing was common and strongly associated with higher levels of lifetime smoking. The results suggest that the exposures act at different levels in the smoking uptake continuum. Both exposures deserve equal emphasis from a public health standpoint.

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PA10-1
PA10-3

SELF-CONTROL BUFFERS THE IMPACT OF MEDIA SMOKING EXPOSURE ON SMOKING INTENTIONS AND BEHAVIOR

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Objective: Media exposure to smoking cues has been linked to onset and progression of smoking in several studies of youth. However, at present there is little knowledge about factors that moderate the impact of media exposure. We investigated whether self-control buffers the impact of media advertising and movie smoking exposure on smoking-related attitudes and behavior in samples of children and adolescents.

Method: Study 1 was a household interview study of 366 children (M age 9.3 years) in a metropolitan area. They were asked 4 questions regarding their exposure to, and attitudes about, tobacco advertising. Their willingness to use cigarettes and their affiliation with peer smokers was assessed. Good self-control was assessed with scales on planfulness, problem solving, and delay of gratification. Study 2 was a telephone interview study of a national sample of 6,222 youth aged 10-14 years (M age 12.0 years). Exposure to smoking in a pool of 534 movies was assessed with an objective coding procedure. Self-control was assessed by a 4-item scale. Similar measures were obtained for willingness to smoke, friends’ smoking, and ever smoked cigarettes (No/Yes). Regression analyses tested main-effect terms for media exposure and self-control, and their cross-product, as predictors for smoking willingness and affiliations, and smoking behavior in Study 2. The analyses controlled for a range of demographics and also for IQ in Study 1.

Results: In Study 1, significant advertising exposure x self-control interactions were found for willingness to smoke (cross-product t = 3.09, p < .01) and peer smoking (t = 2.18, p < .05). In Study 2, movie smoking x self-control also seemed to be significant, were found for willingness (t = 2.78, p < .001), peer smoking (t = 5.23, p < .001), and smoking behavior (t = 4.87, p < .001). In both studies, results showed that the impact of media exposure on smoking willingness, affiliations, and behavior was mediated among persons who scored higher on self-control.

Conclusions: Self-control may be an important moderator of the impact of media exposure to smoking cues. The results have implications for smoking prevention studies and media literacy programs.

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PA10-4

RELEVANCE OF HEALTH WARNINGS ON CIGARETTE PACKAGES: A PSYCHOLINGUISTIC INVESTIGATION

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Theories on the cognitive processing of health warnings usually stress the impact of variables such as message framing (e.g., Rothman & Salovey, 1993), graphical display (O’Hegarty et al., 2006), or individual differences (Dillard et al., 2004). However, few psycholinguistic studies have examined the mental representation of health warnings printed on cigarette packages. In our experiment, we predominantly investigated the mental representation that adolescents build when reading short tobacco warnings. In our experiment, 14-16- and 18-year-olds first filled a questionnaire on their exposure to tobacco. They then participated in a computer-based experiment in which short passages portraying a main protagonist in specific situations were presented, one after the other. Each passage was presented in three parts: a context sentence (e.g., John read in a magazine), a tobacco warning (e.g., Smoking makes your teeth go yellow) and a target sentence describing the main protagonist’s behaviour (e.g., John decided to stop smoking). For half of the participants, a picture accompanied the tobacco warning. Participants had to quickly decide whether the target sentence (behaviour) was a sensible continuation of the first two sentences. The tobacco warnings differed along three variables: (1) severity, (2) time consequence and (3) focus of the message. We monitored both the actual responses, and the time it took participants to respond. Our main result demonstrated noticeable differences between the age groups and between smoking experiences in the sensitivity to tobacco warnings. Fourteen-year-old adolescents seemed to be sensitive to all messages, but more particularly to messages with a high severity content. Images only had an impact on 18-year-olds. Sixteen-year-old smokers also seemed to be sensitive to short-term message focused on health, and long-term messages focused on others. Finally, non-smokers of eighteen years seemed to be sensitive to messages focused on health, whereas the smokers seemed to be sensitive to long-term messages focused on health, but to short-term messages focused on others.


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PA10-5

CIGARETTE PACKAGE DESIGN AND PERCEPTIONS OF RISK AMONG UK ADULTS AND YOUTH: EVIDENCE IN SUPPORT OF PLAIN PACKAGING

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Cigarette packages that give the impression that some brands are less harmful than others are illegal in the EU and prohibited under Article 11 of the FCTC. This study examined combined consumer perception of consumer perception of the impact of “plain packaging,” in which colours and other design elements were removed. A total of 516 adult smokers and 806 youth (aged 11 to 17) participated in an online survey in 2008. Participants were shown pairs of cigarette packages and were asked to compare the packages on 5 measures: taste, tar delivery, health risk, attractiveness, and either ease of quitting (adult smokers) or which brand they would choose if they were to try smoking (youth). Compared to “regular” brands, adults and youth were significantly more likely to rate packages with the terms “smooth,” “silver,” and “gold” as lower tar, lower health risk, and either easier to quit (adults) or their choice of pack if trying smoking (youth). For example, compared to Mayfair King Size, Mayfair Smooth was rated as lower tar by 64% of youth, lower light risk by 54%, while 39% of youth indicated that they would prefer Mayfair Smooth if they were to try smoking. Similar perceptions were reported by adult smokers; in addition, 31% of adult smokers rated Mayfair Smooth as easier to quit. The use of colours had a similar effect: for example, both adults and youth rated a light grey presentation condition coloured grey and red packages, which were otherwise identical. Plain packaging — where the colour and design elements were removed — reduced these misperceptions, as well as the perceived attractiveness of brands. Overall, the findings indicate that considerable proportions of UK youth and adults hold misleading perceptions of risk based on package design. The findings suggest that removing the terms “light” and “mild” is insufficient to eliminate misleading information from packages, and that plain packaging regulations would increase compliance with existing EU law and FCTC guidelines.

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PA11-1

SMOKING CESSATION IN RECOVERY: A PRELIMINARY COMPARISON OF TWO DIFFERENT COGNITIVE BEHAVIORAL TREATMENTS

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A growing body of evidence supports concurrent treatment of nicotine dependence and substance use disorders (SUDs). Recovering substance users are often motivated to quit smoking and cessation may confer added benefits for sobriety. However, new substance use prevention programs about tobacco need to be included in the clinical structure to support effective implementation of tobacco cessation interventions. However, the optimal parameters for successful tobacco cessation programs are not yet known. The current study examined differences in treatment engagement, treatment retention, and treatment outcomes for a contingency-based smoking cessation treatment versus a usual care condition. Participants were 65 male veterans in inpatient treatment for a primary SUD who expressed interest in quitting smoking and were invited to participate in either standard or contingency-based smoking cessation treatment. All participants were offered four sessions of cognitive-behavioral group counseling; participants in the contingency-management condition also had the opportunity to earn cash vouchers for attendance and abstinence. Despite having an equal number of eligible participants at each wave, treatment engagement was significantly more robust in the contingency-based treatment condition compared to the usual care condition (91% vs. 35%). Importantly, the observed discrepancy in recruitment rates cannot be attributed to baseline differences in cigarettes per day, nicotine dependence, or other aspects of smoking history. The contingency-based treatment also demonstrated superior treatment retention (100% contingency-based vs. 57% usual care). Survival analysis showed that 58% of participants receiving contingency-based treatment were smoke-free on quit day, versus only 17% of participants in the usual care condition. Contingent continuous abstinence rate was significantly higher in the contingency-based condition compared to usual care (21% vs. 0%). These preliminary results suggest that contingency management approaches may be useful for maximizing participation in smoking cessation treatment and improving treatment outcomes among recovering substance users.

This project was funded by a Pilot Study Grant awarded to Yvonne M. Hunt by the South Central Mental Illness Research Education and Clinical Center.

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This is a preliminary report and does not reflect the current position of the Mietl-Mental Illness Research Education and Clinical Center.
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PA11-2

STAFF AND CLIENT PERSPECTIVES ON TOBACCO TREATMENT DURING DRUG TREATMENT

Jamie Hunt*, Susan Garrett, Kimber P. Richter, Ana Paula Cupertino, Peter D. Friedmann, Byron Gajewski, and Edward F. Ellerbeck

Background: Some drug treatment facilities are beginning to treat tobacco. Understanding why and how services are currently delivered may aid efforts to promote treatment adoption/quality improvement.

Methods: We conducted semi-structured interviews as part of a mixed-method study of tobacco treatment in 8 facilities in the U.S. Midwest. The purposive sample of facilities varied by ownership, size, drug treatment mode, and level of tobacco services. Eight directors, 25 staff and 29 smoking clients participated. Open-ended questions covered treatment delivery, staff roles, leadership, reimbursement, and attitudes toward the tobacco treatment. Discussions were audiotaped, transcribed, and coded using Ethnograph; inter-observer reliability was 98%.

Results: Counseling: No facility routinely offered individual/group counseling for tobacco use. None had designated staff to treat tobacco. Several offered an occasional group session to “health promotion” in which tobacco was discussed. Most reported clients had to raise the issue of tobacco and indicate a strong interest in quitting before it was included as a treatment goal or addressed. No facilities had protocols/policies for promotion of motivation to quit among clients unwilling to quit. Many staff used tobacco as an example or treatment “tool” for raising awareness about withdrawal, craving, and other aspects of addiction — not to treat tobacco but in service of treating other drug use.

Pharmacotherapy: One facility provided on-site NRT. Most encouraged clients to discuss pharmacotherapy with a physician. Major themes: For-profit facilities tended to focus on helping clients fulfill diversion or court-related requirements for DWI or drug possession—tobacco was not considered treatment priority. Non-profit facilities were more likely to offer motivation to quit, and efforts were more consistent. Most clients wanted to quit, but differed on how/when treatment should occur. Staff and clients disagreed about the type/amount of tobacco treatment offered in each facility.

Conclusions: All agreed that tobacco was dependence-forming and harmful, but the current U.S. focus on legal aspects of addiction, and lack of focus on health may hinder treatment adoption.

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PA11-3

PSYCHIATRIC DISORDERS IN SMOKERS SEEKING TREATMENT: DIFFERENCES IN DEPENDENCE AND OUTCOMES

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Individuals with mental illness represent a significant proportion of the smoking population. Using data from a smoking cessation trial, we analyzed how psychiatric comorbidity relates to treatment and quitting. Participants were 1,504 smokers enrolled in a randomized double-blind placebo-controlled smoking cessation trial comparing five active treatment conditions versus placebo. 1,470 participants were interviewed pre-quit using the WMH-Composite International Diagnostic Interview. 1,080 participants (73.5%) met criteria for a history of at least one Axis I disorder and 305 participants (20.7%) met criteria for a history of at least one anxiety disorder (n=71; Wald=7.25, p=0.01, OR=4.8), a history of an anxiety disorder (n=579; Wald=6.35, p=0.01, OR=7.6) or a current anxiety disorder (n=205; Wald=3.92, p=0.05, OR=74) were less likely to achieve abstinence by the end of treatment than smokers without these disorders, regardless of treatment condition. Smokers with a current mood disorder had higher scores on unwilling to quit. Many staff used tobacco as an example or treatment “tool” for raising awareness about withdrawal, craving, and other aspects of addiction — not to treat tobacco but in service of treating other drug use.

Pharmacotherapy: One facility provided on-site NRT. Most encouraged clients to discuss pharmacotherapy with a physician. Major themes: For-profit facilities tended to focus on helping clients fulfill diversion or court-related requirements for DWI or drug possession—tobacco was not considered treatment priority. Non-profit facilities were more likely to offer motivation to quit, and efforts were more consistent. Most clients wanted to quit, but differed on how/when treatment should occur. Staff and clients disagreed about the type/amount of tobacco treatment offered in each facility.

Conclusions: All agreed that tobacco was dependence-forming and harmful, but the current U.S. focus on legal aspects of addiction, and lack of focus on health may hinder treatment adoption.

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PA11-4

EFFECT OF DEPRESSION ON SMOKING CESSATION OUTCOMES

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A great deal of literature has been published on the effect of both cigarette smoking and cessation on mood. Less information is available on the effect of mood on smoking cessation outcomes, particularly in a substance abuse population. The NIDA Clinical Trials Network recently completed a randomized, open label trial comparing the use nicotine patches plus group counseling and treatment as usual (TAU) to TAU alone for substance-dependent outpatients interested in quitting smoking. We evaluated the effect of Depression on smoking cessation outcomes. A total of 225 individuals were randomized in a 2:1 ratio to either Smoking Cessation (SC; n=153) or TAU (n=72). Approximately 31.1% of the sample (n=70) had baseline Beck Depression Inventory (BDI) scores > 20, and approximately half of the sample (n=110) reported a lifetime history of major depression (MDD).

Individuals with a history of MDD reported an earlier age of onset for cigarette smoking (13.1 (3.7) vs. 14.3 (4.6) yrs; p=0.032), an earlier age of regular smoking (15.0 (3.8) vs. 16.5 (4.9); p=0.034). Although there was not a statistically significant effect of lifetime history of major depression on smoking cessation abstinence rates (9.3% MDD, vs. 4.3% no MDD), there was a greater probability for smoking abstinence for those with lower baseline BDI scores (p=0.041). These differences suggest that for individuals with substance dependence who are interested in quitting smoking, evaluation and treatment of depressive symptoms may play an important role in improving smoking cessation outcomes.

This is a secondary analysis of a NIDA Clinical Trials Network study. The authors listed contributed significantly to this project. CTN grant numbers for the investigators are U10 DA13046 (Reid), U10 DA13035 (Nunes and Jiang), U10 DA13727 (Sonne).

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PA11-5

SMOKING CESSATION INTERVENTION AMONG PEOPLE WITH A PSYCHOTIC DISORDER: 4 YEAR FOLLOW UP

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Background: People with a psychotic disorder have much higher rates of smoking than the general population (90% vs. 20%). Yet few randomised controlled trials have been conducted among this group.

Aim: to investigate 4-year outcomes among participants previously enrolled in a randomised controlled trial of an 8-session individually administered smoking cessation intervention for smokers with a psychotic disorder. Methods: Of the 247 participants recruited to the NHMRC funded randomised controlled trial in Sydney and Newcastle who had previously completed the 1-year follow-up, 149 completed the 4-year follow-up.

Results: At 4-year follow up, 79% of the available sample reported maintenance or improvement in their smoking reduction status relative to 1-year. Abstinence at 1-year– rather than smoking reduction— was significantly associated with point prevalence abstinence at 4-years. Lengthy periods of abstinence were also evident among participants reporting 4-year point prevalence abstinence or at least a 50% reduction. No baseline or intervention status variables predicted smoking status at 4 years. There were improvements in symptoms and function between baseline and 4 years.

Conclusion: The results indicate that smokers with a psychotic disorder are capable of long-term change in their smoking. Although continuous abstinence is rare, lengthy periods of abstinence are not uncommon, suggesting that longer, more flexible interventions are needed which address the fluctuating course of smoking cessation.

Rotary, CHATA, NHMRC, Commonwealth Department of Health and Ageing (Australia), GlaxoSmithKline.

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Although Major Depressive Disorder (MDD) is heritable, few genetic linkage studies have reported convergent findings specifically for MDD. Co-morbid smoking history may provide additional insights into the genetic and environmental contributions to MDD. First, we examined whether DSM-V MDD may be associated with specific genomic regions, using an affected sib-pair design, from a genome screen with a 10 cM microsatellite map. Second, we conducted genetic association analyses in an independent sample using SNPs within biologically relevant genes localized under significant linkage signals. Genome-wide scans (381 autosomal microsatellite markers) and telephone diagnostic interviews were conducted on 289 Australian (AUS) and 161 Finnish [combined N=450 families] families ascertainment from twin registries through index-cases with a lifetime history of MDD. We used an affected sib-pair design, where at least two adult offsprings reported a history of DSM-V MDD per family (212 sib-pairs), and tested for linkage using MERLIN. We found one multipoint linkage signal with a LOD score > 3.0 on chromosome 3 in the AUS subsample. This LOD score of 3.9 at 24.9 cM met genome-wide significance (p < .0001) compared to the entire sample (OR=1.6 [95%CI: 1.2-2.1]). Discordant-twin analyses suggested a possible gene (GRM7) by environment (smoking) interaction effect on MDD. MDD was found to be genetically linked and associated with a glutamate receptor gene (GRM7). The particular novelty of this report is evidence suggesting that smoking may moderate genetic influences (GRM7) on MDD.

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### PA12-2

**PEER SMOKING AND THE NICOTINE RECEPTOR GENES: AN EXAMINATION OF GENETIC AND ENVIRONMENTAL RISKS FOR NICOTINE DEPENDENCE**

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Peer smoking is a strong correlate of smoking behavior. Recently, a number of twin and family based studies have shown both gene by environment correlations and interactions between peer substance use and genetic liability for cigarette smoking and other substance use phenotypes. However, none of these studies have examined the role of specific genes. In prior studies we identified several independent associations between nicotine dependence (ND) and nicotine receptor genes including; CHRNAS (rs16969968), CHRNA3 (rs778776), CHRNA3 (rs12666358). Here we test the hypothesis that these genes modify the risk for nicotine dependence associated with peer smoking.

Methods: Cases of currently nicotine dependence (FTND < 4) and never nicotine dependent controls (lifetime FTND = 0) came from the Collaborative Genetic Study of Nicotine Dependence (n=2,081). Peer smoking was retrospectively assessed for grades 9-12 as the number of best friends who smoked cigarettes (0-8). Logistic regression was used to estimate the main effects of the four SNPs, gender, and peer smoking on nicotine dependence as well as test for gene x environment correlations and interactions.

Results: Level of peer smoking, gender and each of the four SNPs were associated with ND. None of the SNPs showed the same effect for men and women. However, the highest single-point (D3S1304) in this region was associated with a LOD = 3.4, and lies within an integrated haplotype block containing significant linkage signals. Genes localized under significant linkage signals. Genome-wide scans (381 autosomal microsatellite markers) and telephone diagnostic interviews were conducted on 289 Australian (AUS) and 161 Finnish [combined N=450 families] families ascertainment from twin registries through index-cases with a lifetime history of MDD. We used an affected sib-pair design, where at least two adult offsprings reported a history of DSM-V MDD per family (212 sib-pairs), and tested for linkage using MERLIN. We found one multipoint linkage signal with a LOD score > 3.0 on chromosome 3 in the AUS subsample. This LOD score of 3.9 at 24.9 cM met genome-wide significance (p < .0001) compared to the entire sample [OR=1.6 [95%CI: 1.2-2.1]]. Discordant-twin analyses suggested a possible gene (GRM7) by environment (smoking) interaction effect on MDD. MDD was found to be genetically linked and associated with a glutamate receptor gene (GRM7). The particular novelty of this report is evidence suggesting that smoking may moderate genetic influences (GRM7) on MDD.

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### PA12-3

**A GENOTYPE-BASED V1.0 SCORE CAN PROSPECTIVELY PREDICT SMOKING CESSATION SUCCESS**

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Classical genetic studies document substantial genetic influences on smokers’ abilities to quit. We have recently reported genome-wide association for success in quitting smoking that support polygenic contributions of variants at a number of loci to cessation success (Uhl et al., Arch Gen Psychiatry, 2008). In the current study, we test the prospective applicability of a novel “version 1.0” (v1.0) smoking cessation success genetic score to predict successful abstinence in a new trial. We use weighted scores for the alleles nominated in the recent publication that can be identified using Affymetrix 6.0 arrays to provide a “quit success genetic score” for each individual in the first half (n = 206) of a new trial of smoking cessation aided by nicotine patch therapy (NRT). NRT was initiated 2 weeks before a target quit date at either 21 or 42 mg/day. Preplanned mid-trials analyses document significant effects of our v1.0 quit success genetic score, displayed blindly to clinical outcome, in predicting successful 10-week continuous smoking abstinence. The effects are particularly notable in the more highly dependent (FTND) smokers who received the lowest 21 mg/day nicotine patch dose. None of the individuals in this group displayed below-average v1.0 scores achieved abstinence; by contrast, 28% of individuals in this group who displayed above-average v1.0 scores were abstinent at 10 weeks. As these results are replicated in additional participants in this and other studies, they will provide one of the first examples of the predictive abilities of genetic scores composed of weighted results from many SNP genotypes. As these and other datasets allow us to replicate the sensitivity and specificity of improved genetic scores, we will have increased power to personalize the intensity and/or types of smoking cessation treatments, so that individual smokers obtain the best possible opportunities to improve their health by achieving successful abstinence.

Philip Morris USA, Inc. NIDA, NIDA.

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Mild cognitive impairments are an established symptom of nicotine withdrawal, and may be a driver of relapse to smoking. Anticipation of these effects may make repeat attempts at cessation more daunting for some smokers. Previous studies have shown that nicotine replacement therapy is effective in reversing abstinence-induced deficits in performance on cognitive tests of sustained attention. Here we used functional magnetic resonance imaging (fMRI), with a Rapid Visual Information Processing (RVIP) task, to evaluate during short-term smoking withdrawal the brain-activity correlates of cognitive enhancement by a 4mg nicotine lozenge. An evaluator and subject blinded, placebo-controlled, crossover design was employed in smokers denied access to cigarettes for approximately 8 hours. Performance on the RVIP task was significantly better in the being-smoke nicotine condition than placebo (p<.05). Relative to placebo, the nicotine lozenge increased task-associated brain activity in the medial thalamus, and in dorsolateral frontal and parietal cortical regions, corrected p<.05, cluster detection. Other areas where nicotine increased task-induced brain activity include dorsal anterior cingulate, and the cingulum. Previous research has implicated these brain regions in a number of cognitive processes, including executive control, attention and memory. Our findings show that in abstinent smokers a 4mg nicotine lozenge increases attention-vestor and mne in these regions and enhances cognitive task performance. This suggests that nicotine replacement has a direct pharmacological effect to limit a negative cognitive symptom of smoking withdrawal, in addition to the well-described effects of reducing withdrawal-related nicotine craving.

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PA12-5
ASSOCIATIONS OF NICOTINE METABOLISM RATIO, SMOKING BEHAVIORS AND SMOKE EXPOSURE IN A TREATMENT-SEEKING POPULATION

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Nicotine is metabolized to cotinine (COT) and cotinine to 3-hydroxocotinine (3-HC) predominantly by the cytochrome P450 CYP2A6 enzyme. Therefore the 3-HC to COT ratio provides a phenotypic indication of CYP2A6 activity and nicotine metabolism ratio. The rate of nicotine metabolism has previously been associated with daily cigarette use, and smoking behaviors, such that slow metabolizers smoke fewer cigarettes and take smaller puffs. Smoking topography refers to how a person smokes a cigarette and includes number of puffs, total puff volume and puff frequency. Participants (n=112) smoked one of their own preferred brand cigarettes through a smoking topography device as part of a baseline pretreatment session of a large nicotine replacement therapy study and provided a blood sample from which plasma nicotine, COT and 3-HC were determined. Participants also provided a breath carbon monoxide (CO) sample prior to, and after smoking, the difference of which reflected smoke exposure, or CO boost. Results indicate a significant positive association between 3-HC/COT and total puff volume (F=5.4, p=0.02), and between total puff volume and CO boost (F=6.4, p=0.01), but not between 3-HC/COT and puff number. Those with relatively lower nicotine metabolism rates took smaller total puff volume compared to those with faster nicotine metabolism rates; and in turn reduced puff volume lead to decreased smoke exposure. Study results are consistent with previous research, which characterized the relationship between nicotine metabolism rate and smoking behaviors, and smoking behaviors and smoke exposure. Results suggest that smoking behavior may mediate the relationship between nicotine metabolism rate and smoke exposure.

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PA13-1
RESIDENTIAL TOBACCO DEPENDENCE TREATMENT COMPARED TO OUTPATIENT TREATMENT

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We determined the comparative effectiveness of residential treatment versus ambulatory treatment for tobacco dependence. Cigarette smokers treated in the Mayo Nicotine Dependence Center Residential Treatment Program (RTP) (N=226) or outpatients provided comprehensive tobacco dependence consultations (N=4328) between 1/1/2004 and 12/31/2007 were studied. The RTP is an 8-day inpatient program. Baseline data is collected at program admission or at initial consultation and follow-up self-reported abstinence is collected by telephone at 6 months after treatment. Patient characteristics were summarized using means and SDs for continuous variables, frequency percentages for categorical variables and compared between treatment groups using the t-test or chi-square test respectively. Abstinence from all tobacco (30-day point prevalence abstinence) at 6 months was the outcome of interest. Logistic regression was used to assess if the likelihood of abstinence was increased with residential treatment. Compared to smokers treated as outpatients, smokers treated in the RTP were older (54±10 vs. 49±13 years), smoked more (31±14 vs. 21±11 cpd), had more severe nicotine dependence (FTND 6.9±2.0 vs. 5.1±2.3), and were more likely to have been treated for alcoholism (26% vs. 15%) or depression (56% vs. 42%), all p<0.001. Residential patients were more likely to be in the preparation or action stage of readiness (96% vs. 83%) and believe that it was extremely important for them to stop smoking (64% vs. 31%), both p<0.001. The abstinence rate at 6 months following treatment was significantly higher for residential patients compared to out-patients (52% vs. 27%; unadjusted OR=3.0; 95% CI. 2.3 to 3.9). Similar findings were observed using a multiple logistic regression analysis, which adjusted for baseline covariates (adjusted OR=3.6; 95% CI. 2.7 to 5.0). Compared to smokers receiving outpatient treatment, the smokers in the RTP had a more severe tobacco dependence but had significantly higher tobacco abstinence 6 months post treatment. Residential treatment for tobacco dependence is more effective than ambulatory treatment for selected patients who are highly nicotine dependent.

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PA13-2
USING THE ELECTRONIC MEDICAL RECORD TO IMPROVE TOBACCO TREATMENT IN PRIMARY CARE: A CLUSTER RANDOMIZED CONTROLLED TRIAL

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Background: Despite tobacco treatment guidelines, primary care physicians do not reliably document patients’ smoking status or assist smokers to quit. Effective low-cost strategies are needed. Electronic medical records (EMR) are becoming more common in medical practice. They offer a cost-effective way to improve quality of care.

Methods: We built a 3-part enhancement to an existing EMR that included: (1) smoking status icons; (2) reminders to identify and treat tobacco use; and (3) a Tobacco “Smart Form” that factually documents smoking status. A primary care physician trained a central tobacco counselor or to the state telephone quitline. We tested the intervention in a cluster randomized controlled trial in 26 Massachusetts primary care practices. The primary outcome was the proportion of smokers who made contact with a smoking cessation counselor. Secondary outcomes were rates of smoking status documentation, referral to counseling, and medication prescribing. We adjusted all results for clustering by practice.

Results: During 9 months (19/12/06-30/9/07), 132,630 patients made 315,962 visits to 521 clinicians in 26 practices. Documentation of smoking status in a coded field increased more in intervention practices (from 37% to 54% of patients, +17%) than in controls (35% to 46%, +11%; p<0.001). Among 12,207 documented smokers, more in intervention practices than in control practices made contact with a cessation counselor (3.9% vs. 0.3%, p<0.001). The likelihood of medication prescription did not differ by group (2.0% in both). Among 9589 patients who were documented as smokers at the start of the study, more in the intervention practices than in control practices were recorded as nonsmokers by the end of the study (5.3% vs. 1.9%; p<0.001).

Conclusions: This system-level EMR-based intervention improved primary care physicians’ rates of smoking status documentation, smokers’ contact with a tobacco counselor, and may have increased cessation rates. EMRs offer an effective, easily implemented, generalizable tool to improve the treatment of tobacco use in primary care.

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MASS MAILOUT OF PRIMARY CARE PHYSICIANS ADVICE LETTERS AND NRT VOUCHERS TO SMOKERS

Christopher R. Bullen, M.D.*, Donna Watson M.Sc., Hayden McBride, Ph.D., Marewa Glover Ph.D., and Varsha Parag M.Sc., The University of Auckland, Auckland, New Zealand

Personalized letters were mailed to 831 patients recorded as current smokers on the electronic databases of five family physician practices in an urban health district of Auckland, New Zealand. The number of Quit Cards redeemed and the number of calls made to the National Quitline from this and an adjacent health dis- trict comparable in socio-demographic characteristics, before, during and after the intervention, in late 2007 were collected. To assess the acceptability of this approach we surveyed a subset of mail recipients (n=21) by phone, and sent self-completion questionnaires to participating physicians. We monitored quit- ing motional activity and policy over the study period. Quit Card redemptions increased following the intervention and were 9% higher (95% CI 3%–16%, p=0.0047) among people in the intervention area than in the comparison district; 73.8% of the Quit Cards issued were redeemed for NRT gum at community pharmacies. A small (5%, 95% CI 1%–12%) increase in Quitline calls from base- line to the end of the intervention period also occurred. We found no other concurrent change in tobacco or NRT policy, price, promotion or practice that could account for the observed effects. The strategy was acceptable to GPs and recipi- ents but the work involved in accurately identifying patients who smoke from practice databases was substantial due to inaccurate or incomplete records. We conclude that posting unsolicited, written quit advice plus information about direct support and access to subsidized NRT to smokers, regardless of their motivation to quit, prompted a quit attempt in almost 10% of recipients and was acceptable. This approach has potential as a mass intervention that could be repeated at reg- ular intervals by primary care physicians. However, to make it cost-effective, the maintenance of accurate smoking status documentation in patient records is essential.

This study was supported by the New Zealand Ministry of Health.

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TELEPHONE CARE COORDINATION FOR SMOKING CESSATION: A RANDOMIZED TRIAL

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Background: Telephone counseling is effective but seldom used within health care. Patients rarely follow through with referrals to telephone programs. We evalu- ated the effectiveness of four approaches to telephone care coordination for smoking cessation.

Methods: We included 35 sites in a Veterans Health Administration (VA) group randomized trial of telephone care coordination (TeleQuit). Providers were respon- sible for initiating brief counseling and referring smokers to TeleQuit through two additional clicks in the electronic medical record. All patients enrolling in TeleQuit received medications and self-help materials. We randomly assigned referral weeks to different approaches to patient contact — either proactive (we called the patient) or reactive (we mailed materials and waited for the patient to call). In addition, we randomly assigned sites to either multi-session counseling from the California Smokers’ Helpline (quitline) or self-help materials only. At 6-7 months, we called all referred patients (whether enrolled or not) to assess self-reported smoking status.

Results: Over 18 months, we received 6118 referrals. Proactive contact patients were more likely to enroll in the program (1725/3035 = 57%) than reactive contact patients (887/3083 = 29%) (OR 2.8, 95% CI 2.5-3.1). Self-help patients were more likely to enroll (1073/2257 = 48%) than quitline patients (1639/3881 = 42%) (OR 1.2, 95% CI 1.1-1.4). Of the 2369 patients who had reached 6-month follow-up, 210 had moved and 24 died prior to evaluation. Of the remaining subjects, we were able to evaluate 2106 subjects (70%) of whom 310 were abstinent (21%). Abstinence rates were comparable across groups — proactive self-help, 20%; proactive quitline, 25%; reactive self-help, 15%; reactive quitline, 22%.

Conclusion: Proactive contact dramatically increases participation in cessation services. Long-term abstinence rates were excellent in all four groups, although this preliminary follow-up analysis did not have the power to compare abstinence rates between groups.

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HEALTH PROFESSIONAL ADVICE ON QUITTING IN HOSPITAL PATIENTS – ARE WOMEN TREATED DIFFERENTLY TO MEN?

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Hospitalisation provides an ideal opportunity to promote smoking cessation, due to an increase in health awareness and hospital smoking restrictions. Some pop- ulation studies, but not most hospital studies, have found lower rates of quitting in women compared to men. The aim of the current study was to determine factors associated to smoking cessation in smokers admitted to an Irish urban teaching hospital. 1086 smokers admitted to hospital were interviewed during admission and six months later (follow-up rate: 76%). Reports of smoking cessation at follow-up were biochemically validated using carbon monoxide testing. The six-month overall val- idated smoking cessation rate was 11.4%. Fewer than half the smokers recalled receiving advice from doctors. Men were more likely to quit than women and this difference persisted in multivariate analysis (OR 2.0 [95% CI 1.2 – 3.4]), which included motivation to quit as a confounder. More men than women recalled advice to quit from doctors (43.2% versus 33.5% [p = 0.039]) and nurses (40.7% versus 27.3% [p = 0.003]). This difference was not explained by a lack of interest in women in receiving advice. Recall bias did not appear to explain the difference either, as similar proportions of men and women recalled advice from the hospital smoking cessation service, which was backed up by independent results from the service database. Recalled advice from doctors and nurses during admission was significantly related to quitting at follow-up, and they are the main referrers to the smoking cessation service, which also had a significant association with quitting (OR 2.7 [95% CI: 1.7 – 4.2]). The overall proportion of smokers recalling advice from doctors was lower than that reported in several American studies. Education on smoking cessation should be integrated into hospital and health professional training curricula. This study appears to show that there may be a real difference in the frequency that men and women are advised by doctors and nurses on smok- ing. Given that women in this study had a reduced rate of quitting, it is of potential concern that they may be put at further disadvantage by lack of advice from hospital staff.

This study was carried out in St. Vincent’s University Hospital, and was funded by the Irish Cardiovascular Health Strategy.

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EVALUATION OF FIRST “QUITLINE” IN IRAN DURING 2007-08

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Introduction: There are about 10 million smokers in Iran & 70,000 smoking related deaths annually. Like other countries there are different methods to quit smoking in Iran. Prominent recent development in tobacco control is the worldwide proliferation of telephone-based tobacco cessation programs, commonly referred to as quitlines.

Aims and Objectives: This study has been done for the first time in Iran. Since we didn’t have a quitline in our country, we decided to establish it.

Methods: This service included a phone line, a smoking cessation trained coun- selor & was based on first-come, first-served pattern. In the beginning, we gave several announcements in November 2006. Our program consisted of five ses- sions with one-week intervals. Our questionnaires were based on WHO & IUATLD questionnaires. Nicotine dependency was evaluated by Fagerström test. According to the self-report of them, they were not smoking since the third session. This claim confirmed by the expired carbon-monoxode rate.

Results: 307 subjects made contact. 80% were male. The mean age was 38.54 years. 71% were married. 72.7% were educated & 50% had Fagerström test>6. The abstinence rates were comparable across groups — proactive self-help, 20%; proactive quitline, 25%; reactive self-help, 15%; reactive quitline, 22%.

Conclusion: It seems this is an appropriate & accessible method, which can be used in smoking cessation.

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Context: Internet smoking cessation programs are widely available but there are no large-scale, controlled studies demonstrating their long-term efficacy.

Objectives: To determine whether an interactive Internet-based smoking cessation program is more effective in promoting long-term cessation compared to a control site and to evaluate the role of depressed affect in quitting.

Design, Setting, and Participants: In a randomized controlled trial sponsored by the American Cancer Society (ACS), we compared an interactive Internet-based smoking cessation program called “SmokeClinic” (N=1106) to a control site (N=1047) on long-term outcomes. Participation in the study was limited to English-speaking daily smokers residing in the United States. The final sample consisted of 661 men and 1,492 women. Participants’ ages ranged from 18 to 84, with a mean of 40.6 years (SD = 11.2).

Interventions: SmokeClinic employed a clinical theory modeled on an in-person treatment approach presenting a set sequence of interactive steps including assessment, preparation, quitting, and relapse prevention. The control site contained downloadable self-help booklets.

Main Outcome Measures: 30-day point prevalence abstinence rates were collected 13 months after randomization. Data were analyzed according to intention-to-treat principles.

Results: SmokeClinic participants were significantly more likely to be abstinent at 13-month follow-up than control participants (15.9% vs. 10.1%; OR = 1.58, CI 1.15-2.16, p = .005). The depression by site interaction also was significant (p = .03), indicating that among participants not reporting depressed affect at intake, SmokeClinic users were more likely than control participants to be abstinent at follow-up (15.0% vs. 10.1%; OR = 1.58, CI 1.15-2.16, p = .005). There was no difference between the two conditions among participants reporting depressed affect (8.1% vs. 10.2%, ns).

Conclusions: Data support the efficacy of an Internet-based intervention for smoking cessation modeled on an in-person treatment approach, especially for participants not experiencing depressed affect.

This study was funded internally by the American Cancer Society. The development of the SmokeClinic Internet program was supported by the American Legacy Foundation, and the National Institute of Drug Abuse (NIDA).

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University of Bristol, UK there is a growing consensus that this relationship is bidirectional. While smokers often reports smoking to alleviate anxiety, they may in fact be smoking to alleviate abstinence-induced stress. It is possible to investigate the effects of abstinence from smoking on anxiety symptoms using a CO2 challenge, which acts as an unconditioned anxiogenic stimulus. Regular cigarette smokers (n = 16), defined as smoking at least 5 cigarettes per day and smoking within one hour of waking, and screened to ensure good physical and psychiatric health, attended one session and were randomized to either abstain from smoking for 12 hours or to smoke upon arrival. Participants then underwent two 20-minute inhalations, one of which comprised medical air and the other comprised 7.5% CO2-enriched air. Measures of anxiety (Spielberger State-Trait Anxiety Inventory; STAI) and affect (Positive and Negative Affect Schedule; PANAS) were recorded after each inhalation. A two-way ANOVA with abstinence and gas as between- and within-subject factors respectively revealed a significant abstinence by gas interaction (F[1,14] = 26.08, p < 0.001) for STAI-state scores. Both groups reported greater anxiety after inhalation of CO2 compared to air; however, the difference between inhalations was significant for the non-abstinent group (air: M = 34, SD = 7; CO2: M = 51, SD = 10; p = 0.001) but not the abstinent group (air: M = 40, SD = 6; CO2: M = 46, SD = 12; p > 0.1). There was a main effect of gas for negative PANAS scores (F[1,14] = 11.52, p = 0.004), and a trend towards a main effect for positive PANAS scores (F[1,14] = 3.40, p = 0.088), indicating greater negative affect and lower positive affect after CO2 compared to air. These data suggest that the belief that smoking alleviates stress is a misconception, and that anxiolytic effects of smoking may actually be relief from nicotine withdrawal. When faced with an acute stressor (CO2), non-smokers reported significantly greater anxiety (compared to air), suggesting nicotine may enhance the subjective anxiety response in a stressful situation.

National Association for Research on Schizophrenia and Depression.

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PA15-2 EFFECTS OF GENDER AND CIGARETTE SMOKING ON REACTIVITY TO PSYCHOLOGICAL AND PHARMACOLOGICAL STRESS PROVOCATION

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The influence of gender and nicotine dependence status on reactivity in two human laboratory stress paradigms. Participants were 46 (21 men, 25 women) healthy individuals who completed the Trier Social Stress Task (i.e., performed speech and math calculations in front of an audience) and a pharmacological stress provocation (i.e., administration of corticotropin releasing hormone (CRH) after an overnight hospital stay. Approximately half (53%) of the participants were smokers. Cortisol, adrenocorticotropic hormone (ACTH), physiologic measures (heart rate, blood pressure), and subjective stress were assessed at baseline and at several time points post-task. Men demonstrated higher baseline ACTH and blood pressure as compared to women; however, ACTH and blood pressure responses were more pronounced in women. Women smokers evidenced a more blunted cortisol response as compared to non-smoking women, whereas smoking status did not affect the cortisol response in men. Finally, there was a more robust cardiovascular and subjective response to the Trier as compared to the CRH.

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PA15-3 DYSREGULATED STRESS RESPONSE AND SMOKING RELAPSE IN MEN AND WOMEN

Mustafa a’Abasi, Larry Wittmera, Dorothy Hatsuksu, and Ruth Westra, University of Minnesota Medical School

We have completed a series of studies to examine the extent to which hormonal and mood changes during early smoking abstinence predict relapse in men and women. The design across studies included baseline measurement of diurnal salivary cortisol during an abstinence smoking and during the first 24 or 48 hours of abstinence. Measures of cardiovascular and adrenocortical responses to acute psychological stress (public speaking and mental arithmetic) were also collected. Our results have shown that: 1) Smoking abstinence reduced cortisol concentrations and increased negative affect; 2) participants who relapsed during the first week of abstinence exhibited exaggerated mood and cortisol changes during early abstinence; 3) attenuated adrenocorticotropic hormone (ACTH) and cortisol responses to acute stress during the first day of a quit attempt predicted early relapse. Women showed greater declines in cortisol concentrations during abstinence than men, and changes in cortisol’s area under the curve negatively correlated with intensity of physical symptoms, negative affect, and withdrawal symptoms reported by women (p < 0.05), but not by men. The ACTH association with relapse was more consistent in men (p < 0.01) than in women, while negative affect and intensity of withdrawal symptoms were more consistently associated with relapse in women (p < 0.05) than in men. These results were confirmed in a recent study that included 90 smokers (47 men and 43 women) who were interested in cessation. Participants were asked to abstain for 48 hours at the beginning of their quit attempt. During this period they collected saliva and self-report measures. The results showed that attenuated cortisol concentrations during the morning hours predicted number of days until relapse (p < 0.05), although this was significant in men only (p < 0.05). In combination these studies indicate that disruption of stress response systems may play a role in stress-related smoking and relapse. Our results reinforce the importance for developing sex-specific intervention strategies to combat tobacco use and addiction.

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PA15-4

HPA AXIS RESPONSE TO NALTREXONE AND CIGARETTE SMOKING IN NICOTINE DEPENDENT SUBJECTS
A.C. King, University of Chicago

Sex differences have been demonstrated in nicotine sensitivity and discrimination, tobacco withdrawal symptoms, and smoking cessation outcomes. There may also be sex differences in psychophysiological responses to opioid antagonists, such as naltrexone, particularly in terms of disinhibition of the hypothalamic-pituitary-adrenocortical (HPA) axis. This presentation reviews two studies examining psychophysiological responses in men and women smokers: the first study was a laboratory challenge involving acute naltrexone administration and cigarette smoking, and the second study was a randomized, placebo-controlled pilot smoking cessation trial involving acute naltrexone in addition to nicotine patch and counseling. In the laboratory study, 22 men and 20 women smokers, averaging 20.4 cigarettes daily, participated in two separate laboratory sessions after 12 hours of overnight smoking abstinence. Subjective measures and blood samples were obtained at various intervals before and after administration of 50 mg oral naltrexone or identical placebo (in random order). Participants also received a smoking cue and smoked a cigarette during the testing session. Results showed greater naltrexone-related subjective response (increases in negative monotonic effects) and greater increases in ACTH and cortisol levels to naltrexone in women versus men (p<.05). Further, cigarette smoking tended to potentiate naltrexone-induced increases in both stress hormones (p=.06). In the second study, 56 men and 54 women smokers, averaging 21.1 cigarettes daily and desiring to quit smoking, participated in an eight-week intervention. Results showed that naltrexone improved smoking cessation outcomes in women but not men: naltrexone improved women’s quit rates and decreased their smoking urges and withdrawal symptoms (p<.05). Taken together, the results provide further evidence for sex differences in the interaction between cigarette smoking and the endogenous opioid system, which may play a role in clinical course and outcome. This study was supported by K08-AA00276-04, R01-DA016834, P30-CA14599-28, and M01-RR00055.

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PA16-1

INHIBITION OF ANANDAMIDE HYDROLYSIS: A NOVEL STRATEGY TO REDUCE RELAPSE FOR NICOTINE
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The cannabinoid CB1 antagonist rimonabant appears promising to treat nicotine dependence. However, its use is limited by psychiatric side effects. Here we explored the effects of enhancing anandamide (an endocannabinoid) transmission on motivation for nicotine and relapse for nicotine-seeking in rats. UR597, a selective inhibitor of the fatty acid amide hydrolase (FAAH) enzyme (which degrades anandamide), was used, and a comparison with Rimonabant was performed.

Results: We found that Rimonabant (0.3-3 mg/kg) dose-dependently reduced the breaking point for nicotine (0.03 mg/kg/infusion), a measure of motivation for nicotine (F4,28 = 10.99, p<.0001; p<.001 and p<.0001 vs. baseline for 1 and 3 mg/kg of rimonabant, respectively) and the effect of 1 mg/kg of rimonabant was stable over 3 consecutive sessions (p<.01 vs. baseline at each test-session). In contrast, UR59587 did not affect direct motivation for nicotine (NS). After extinction of the reward, both rimonabant and UR59587 (1 mg/kg p<.05 vs. re-instatement under vehicle pretreatment for each kind of reinstatements) and UR597 (0.3 and 1 mg/kg, p<.05 vs. re-instatement under vehicle pretreatment for each dose and each kind of reinstate-ments) significantly decreased these reinstatements.

Discussion: Blockade of CB1 receptor by rimonabant and enhancement of anandamide levels by inhibition of FAAH activity produced similar reduction of reinstatements of nicotine-seeking. These results suggest that inhibition of anandamide hydrolysis could be a novel strategy to reduce relapse for nicotine. Since UR597 also possess anxiolytic and antidepressant effects, this compound should be devoid of the side effects of Rimonabant.

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PA15-5

ATTENTION BIAS TOWARD SMOKING RELATED AND PLEASANT CUES IN WITHDRAWAL AND UNDER STRESS
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This study was conducted while the first author was at the University of Wisconsin-Madison. Supported by a grant from the University of Wisconsin Transdisciplinary Tobacco Use Research Center and Marian Schwartz Feidler Fund (HPA axis research).

The present study used the modified Stroop paradigm to extend past research regarding attention biasing toward smoking, unpleasant, pleasant, and neutral words among adult nonsmokers and daily smokers. Color-naming reaction time data were used to test the hypothesis that smokers would show a narrowing of attention toward smoking-related cues when withdrawn from tobacco for 24 hours or under stress, particularly when anticipating a proximal opportunity to smoke. Nicotine withdrawal and anticipated smoking opportunities were manipulated between subjects and threat (electric shock) condition and word type were manipulated within subjects. Results indicated that both nonsmokers (N=22) and smokers (N=22) showed differential attention towards unpleasant, pleasant, and smoking-related cues, relative to neutral words, and a bias toward pleasant and smoking-related words relative to unpleasant words. Neither smokers nor nonsmokers showed a bias toward smoking-related stimuli when compared with other pleasant stimuli, however. Results also suggested that, among smokers, nicotine deprivation and exogenous stress (threat of electric shock) may have a non-additive effect on attention toward pleasant cues, but this effect did not appear to be specific to smoking cues, as reaction times were similar for smoking and pleasant words. Similarly, instructing smokers that they would have an opportunity to smoke did not significantly increase the bias of nicotine-deprived smokers’ attention toward smoking-related cues, relative to arousing unpleasant and pleasant cues. Overall, results suggest that smokers’ attention may be biased toward both smoking-related and other salient cues when deprived of nicotine and anticipating an opportunity to smoke. As such, results did not provide strong support for the predicted narrowing of smokers’ attention toward smoking-related cues in the environment.

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PA16-2

WHAT IS THE “REAL” PRICE OF CIGARETTES?
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Governments considering raising tobacco excise taxes need evidence on how price changes affect tobacco use: such proof depends on valid price data, which do not exist in many low and middle-income countries. We hypothesize that prices reported by tobacco users are valid measures of national prices. To test this, we compared state-level measures of cigarette prices derived from the 2003 and 2006/07 TUS-CPS (US probability samples of 240,000 each) with the retailer-reported price data from the Tax Burden on Tobacco (TBOT) used in most US research on cigarette demand. The TBOT data have several limitations, including exclusion of opportunities for tax avoidance; failure to account for price promotions/discounts; and limited inclusion of non-traditional outlets and brands. We hypothesize that the self-reported prices will be less subject to these weaknesses. The TUS-CPS prices were lower than TBOT in 2003 and in 2006/07. Furthermore, the TUS-CPS data showed an increase in prices over time, consistent with state excise tax increases, removal of loopholes in the Master Settlement Agreement of 1998, and state efforts to curb the sale of other tax-exempt cigarettes and other tax avoidance during this period. In contrast, TBOT prices show almost no change over time. The TUS-CPS data show a decline in tax avoidance over time, from nearly 6% in 2003 to just over 5% in 2006/07, mostly accounted for by declines in forms of avoidance other than cross-border sales. Tax avoidance varies widely across states and is positively correlated with same-state cigarette prices (0.56 in 2003; 0.51 in 2006/07). Differences between TUS-CPS and TBOT prices were higher in states where the limitations of the TBOT were expected to be greatest (i.e., NY and WA). Observed state-level differences and changes over time are consistent with state tax and policy changes and suggest that measures based on self-report data accurately reflect the prices smokers actually face for cigarettes. Thus, self-reported price data like those collected in the Global Adult Tobacco Survey should be valid for use in international research assessing price impact on tobacco use. National Cancer Institute.

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PA16-3  
LACK OF REINFORCEMENT ENHANCING EFFECTS OF NICOTINE IN HUMANS

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Recent animal research has shown that, aside from its primary reinforcing effects, nicotine may have reinforcement enhancing effects, in that it appears to increase the reinforcing effects of other reinforcers in the environment that are unrelated to nicotine. To our knowledge, no human studies have directly examined this potentially important influence of nicotine. We report two studies examining the influence of nicotine, via nasal spray (study 1) and cigarettes (study 2), on the positive reinforcing effects of money and music, as well as the negative reinforcing effects of aversive auditory stimuli. Participants in both studies were young adults with some past smoking exposure but who never were nicotine dependent (to better match animal study designs and to rule out withdrawal relief as an explanation for nicotine effects). Reinforcement was assessed by responses on a computer task that were immediately reinforced by small amounts of money, the playing of preferred music, or the termination of aversive loud stimuli, on separate 15-min trials in counter-balanced order. A fourth trial, involving no reward, served as a control. In study 1, 17 subjects (10 M, 7 F) responded for the reinforcers on three separate sessions, involving intermittent dosing with 0, 5, or 10 µg/kg nicotine via nasal spray. In study 2, 30 subjects (14 M, 16 F) responded for the reinforcing effects on three separate sessions, involving intermittent controlled smoking of 0.05 mg or 0.6 mg nicotine cigarettes or no smoking. Results showed no effects of nicotine, whether by nasal spray or cigarette smoking, on responses reinforced by any of the three rewards. There was also no difference between the smoking and no smoking conditions in study 2. These results suggest that any reinforcement enhancing effects of nicotine in humans may be specific to dependent smokers or may be relatively narrow and dependent upon procedural conditions different from those in the current studies.

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PA16-4  
EVALUATION OF SAFETY OF VARENICLINE IN SCHIZOPHRENIA

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Background: Varenicline is a highly effective pharmacotherapy for nicotine dependence. The prevalence of smoking and smoking-related morbidity and mortality is high in schizophrenia. While there have been case reports of mood disturbance and behavioral dyscontrol with varenicline, there have been no systematic studies of the effect of varenicline on mood and behavior in smokers at high risk for these symptoms.

Method: We are conducting a 40-week, double-blind, placebo-controlled trial of the efficacy of extended-duration varenicline for prevention of relapse to smoking in clinically stable adult smokers with schizophrenia. Here we report safety results from the 13-week, open-label varenicline lead-in treatment period in the first 94 participants. Clinical and cognitive assessments at baseline were compared with assessments made after 13 weeks of varenicline treatment using paired t-tests.

Results: There was no change from baseline in scores on the Brief Psychiatric Rating Scale (BPRS) (baseline 55.9 (19.5), 59.0 (11.2) week 13), t=-0.70, BPRS Psychosis subscale score (baseline 9.73 (5.8), 11.0 (5.6) week 13), t=-0.17, Calgary Depression Rating Scale (baseline 4.1 (3.2) 3.6 (2.3) week 13), t=0.58, Schedule for Assessment of Negative Symptoms (SANS) (baseline: 36.6 (9.3) and 36.3 (14.4) week 13), t=0.09. There was a trend for reaction time and variability in reaction time to be improved at week 13 compared with baseline for 3- and 4-digit tasks on the Continuous Performance Task, Identical Pairs Version (CPT-IP).

Conclusion: In this systematic, open-label study, varenicline was not associated with worsened clinical symptoms of schizophrenia and shows a trend toward improving cognitive dysfunction associated with the disorder.

NID R01 DA021245-01. Smoking Cessation and Relapse Prevention in Patients with Schizophrenia Pfizer has provided product support in the form of drug and placebo at no cost for the study.

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PA16-5  
THE EFFECTS OF PURE NICOTINE, DENICOTINIZED TOBACCO AND NICOTINE-CONTAINING TOBACCO ON CIGARETTE CRAVING, WITHDRAWAL, AND SELF-ADMINISTRATION

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Although nicotine is widely believed to be the primary addictive component in tobacco, nicotine-specific treatments are not effective for most smokers, and the administration of non-nicotine tobacco constituents via denicotinized cigarettes has been shown to reduce symptoms of craving and withdrawal. In order to begin to clarify the relative roles of nicotine and non-nicotine tobacco constituents in smoking reinforcement, the present study directly compared the effects of the acute administration of pure nicotine (via nicotine and placebo inhalers), nicotine-containing tobacco, and denicotinized tobacco, on smokers’ subjective responses and motivation to self-administer their own preferred brand of tobacco. 17 smokers (10 male) completed four randomized blinded laboratory sessions following overnight abstinence. After a baseline subjective assessment, participants administered puffs from a nicotine inhaler, placebo inhaler, nicotine-containing cigarettes (Quest 1), or denicotinized cigarettes (Quest 3), over a twenty-minute period. They then completed a second subjective assessment and were given the opportunity to self-administer their preferred brand of cigarettes over the next 90 minutes. Participants rated the nicotine-containing inhaler as being less pleasant, and the nicotine-containing cigarettes as more satisfying, relative to each of the other conditions. Both nicotine-containing and denicotinized cigarettes attenuated symptoms of craving and withdrawal to a significantly greater extent than either of the inhaler conditions. In addition, while both nicotine-containing and denicotinized cigarettes were found to delay the onset of preferred tobacco self-administration relative to the inhaler conditions, only nicotine-containing cigarettes reduced overall levels of self-administration during the session. Findings suggest that while a combination of nicotine and non-nicotine tobacco constituents may be necessary to fully satisfy a smoker’s urge to smoke, tobacco in the absence of nicotine may be more effective in acutely reducing symptoms of craving and withdrawal than nicotine in the absence of tobacco.

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NIPA-2
(Former PA12-5)
DOPAMINE AND SEROTONIN TRANSPORTER AVAILABILITY DURING ACUTE ALCOHOL WITHDRAWAL: EFFECTS OF COMORBID TOBACCO SMOKING

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Tobacco smoking is highly comorbid with heavy alcohol drinking, yet the interactions of tobacco smoking and alcohol drinking on brain catecholaminergic and serotonergic markers is unexplored. Here we evaluate the effects of alcohol drinking alone from comorbid alcohol drinking and tobacco smoking on dopamine (DA) and serotonin (5-HT) transporter availability. Fourteen heavy alcohol drinking smokers (n=6) and nonsmokers (n=8) and 14 age-matched control smokers (n=6) and nonsmokers (n=8) were imaged with [123-I]beta-CIT SPECT. Alcohol drinking smokers and non-smokers consumed 134±100 and 197±140 drinks, respectively over the previous month and were imaged during acute withdrawal, e.g., within 5 days of their last drink. Overall, striatal DA transporter availability was significantly higher (16%, P=0.04) in alcohol drinkers compared to controls. 5-HT transporter availability was also significantly higher in alcohol drinkers versus controls in the brainstem (25%, P=0.001) and the dienecophalon (8%, P=0.01). However, this elevation was restricted to alcohol drinking nonsmokers, with higher DA transporter availability in the striatum (26%, P=0.003), and higher 5-HT transporter availability in the dienecophalon (26%, P=0.02) and brainstem (42%, P<0.001) compared to control nonsmokers. There was no significant difference in DA or 5-HT transporter availability between alcohol drinking smokers and control smokers. There was a significant positive correlation between days since last drink and 5-HT transporter availability in the diencephalon (r=0.60, P=0.023) and brainstem (r=0.54, P=0.047), in the total group of alcohol drinkers and specifically in the alcohol drinking nonsmokers, but not alcohol drinking smokers. Thus, enhancing the accessibility and acceptability of this intervention, particularly in rural areas where transportation can be unreliable and treatment providers distant. In the present study, rural Kentucky smokers (>90% cigs/day) were enrolled in a randomized trial to evaluate the efficacy of an Internet-based smoking cessation program. During the 6-week intervention period, all subjects were asked to record 2 videos of themselves providing breath carbon monoxide (CO) samples daily. Subjects also typed the numerical value of their CO reading into a web-based software that provided feedback and reinforcement based on their smoking status. Videos were uploaded from a secure website to a server at the University of Kentucky where research technicians reviewed and approved or declined approval of the breath sample as evidencing abstinence. Subjects in the Abstinence Contingent (AC) group received monetary incentives contingent on recent smoking abstinence (i.e., CO below 5 PPM). Subjects in the Yoked Control (YC) group received monetary incentives independent of their smoking status. Outcome assessments were conducted at weeks 2, 4, 6 and 12 of the study period. Analyses indicate that nearly 30% of breath samples from the 6-week intervention were negative for those in the AC whereas only 10% of samples were negative for those in the YC. In addition, nearly 25% of individuals in the AC achieved at least 2 weeks of continuous abstinence whereas no individuals in the YC did so. Post-intervention data indicate that this effect on smoking is sustained. These results demonstrate the efficacy and accessibility of delivering reinforcement for smoking cessation over the Internet to rural individuals. Future studies should determine if increasing reinforcer value or reducing the CO cutoff enhances abstinence rates.

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NIPA-1
(Former PA6-2)
COTININE LEVELS AND MENTHOL CIGARETTE USE AMONG BLACK AND WHITE SMOKERS IN NHANES 2003-2006

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In the U.S., it has been widely reported that non-Hispanic black smokers have higher levels of serum cotinine than non-Hispanic white smokers, even though they smoke less, on average. We examined whether the differences in serum cotinine could be attributed to the use of menthol cigarettes. We obtained data from NHANES 2003-2006 for all smokers ages 20 and older who self-report as non-Hispanic black or white. Individuals who reported smoking cigarettes in the past 5 days were considered current smokers. Those who used other tobacco/nicotine products in the past 5 days and those without cotinine measurements were excluded. Multiple linear regression was used to model log-transformed cotinine, using survey weights and complex survey variance estimates. A total of 1,299 smokers (median: 206 ng/mL, std error: 9 ng/mL) and non-menthol smokers (GM: 201 ng/mL, SE: 23 ng/mL). Among whites, there were also no differences in cotinine concentrations by menthol use (Menthol — GM: 175 ng/mL, SE: 11 ng/mL; Non-menthol — GM: 177 ng/mL, SE: 8 ng/mL). There were no statistical differences in the number of cigarettes smoked between these groups among blacks or whites. Consequently, menthol use was not associated with cotinine levels among black or white smokers after controlling for cigarettes per day. Nor was there evidence for an interaction between cigarettes smoked per day and menthol use on cotinine concentrations. In multivariate models, cigarettes smoked per day and earlier time to first cigarette were predictive of higher cotinine concentrations among black and white smokers. These data suggest that menthol use is not responsible for the differences in cotinine concentrations observed among black and white smokers in the U.S.

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NIPA-3
(Former PA14-5)
INTERNET-BASED ABSTINENCE REINFORCEMENT IN RURAL KENTUCKY SMOKERS

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The high burden placed on patients and treatment providers to participate in traditional voucher-based reinforcement of smoking cessation may limit its efficacy. Specifically, attending the clinic daily to verify smoking abstinence makes it difficult to comply with treatment demands. The use of remote monitoring and reinforcement of smoking abstinence last week or at the time of abstinence may enhance the accessibility and acceptability of this intervention, particularly in rural areas where transportation can be unreliable and treatment providers distant. In the present study, rural Kentucky smokers (>90% cigs/day) were enrolled in a randomized trial to evaluate the efficacy of an Internet-based smoking cessation program. During the 6-week intervention period, all subjects were asked to record 2 videos of themselves providing breath carbon monoxide (CO) samples daily. Subjects also typed the numerical value of their CO reading into a web-based software that provided feedback and reinforcement based on their smoking status. Videos were uploaded from a secure website to a server at the University of Kentucky where research technicians reviewed and approved or declined approval of the breath sample as evidencing abstinence. Subjects in the Abstinence Contingent (AC) group received monetary incentives contingent on recent smoking abstinence (i.e., CO below 5 PPM). Subjects in the Yoked Control (YC) group received monetary incentives independent of their smoking status. Outcome assessments were conducted at weeks 2, 4, 6 and 12 of the study period. Analyses indicate that nearly 30% of breath samples from the 6-week intervention were negative for those in the AC whereas only 10% of samples were negative for those in the YC. In addition, nearly 25% of individuals in the AC achieved at least 2 weeks of continuous abstinence whereas no individuals in the YC did so. Post-intervention data indicate that this effect on smoking is sustained. These results demonstrate the efficacy and accessibility of delivering reinforcement for smoking cessation over the Internet to rural individuals. Future studies should determine if increasing reinforcer value or reducing the CO cutoff enhances abstinence rates.

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WHY DO SMOKERS RELAPSE?

Joseph McClernon, Ph.D., Duke University Medical Center

This year’s recipient of the 2009 Jarvik-Russell Award (formerly the SRNT Young Investigator Award) is Dr. Joseph McClernon. Dr. McClernon will deliver a 25-minute lecture on his emerging program of research. Dr. McClernon’s award will be presented to him at the Welcome and Awards Ceremony, which will be held on Monday, April 27 from 5:30 p.m. - 7:00 p.m.
POS1-1

SMOKERS SUPPORT A WIDE RANGE OF SMOKEFREE ENVIRONMENTS (ITC PROJECT: NEW ZEALAND)

Richard Edwards*, Nick Wilson, Deepa Weerasekera, and George Thomson, Health Promotion and Policy research Unit, Department of Public Health, University of Otago, Wellington, New Zealand

Aim: To determine smokers’ support for a wide range of smokefree environments and how support varies by ethnicity and deprivation level.

Methods: The New Zealand arm of the International Tobacco Control Policy Evaluation Survey (ITC Project) uses as its sampling frame the New Zealand Health Survey (a national sample with boosted sampling of Māori, Pacific and Asian New Zealanders).

Results: Most smokers supported four restrictions, with only a minority agreeing that smoking should be allowed: in cars with pre-school children (3%), anywhere in outdoor eating areas (22%), at council-owned playgrounds (32%) and within 5 meters of the entrance to public buildings (48%). In contrast, there was majority support for allowing smoking on lifeguard-patrolled beaches (55%), and in at least some of the outdoor seating areas of restaurants/cafés (51%) and pubs (83%). Most smokers reported that they made some effort to minimise exposure of non-smokers to their smoke (87%). Most (62%) smokers reported that smoking is “never” allowed anywhere in their home. Another 26% reported partial restrictions on smoking in the home. Most (73%) stated that they never smoke in their car when non-smokers are present. Only 12% of employed smokers reported that people smoked in indoor areas where they worked in the last month. Support for bans on outdoor smoking in one or more of four locations (playgrounds, within 5m of entrancesways, on patrolled beaches or outdoor eating areas of restaurants) did not differ significantly by socio-economic position (76-83% across quintiles of deprivation) or by ethnicity (Asian: 91%; Pacific 86%; Māori 80%; European 80%).

Conclusions: Most New Zealand smokers support smoking restrictions in various outdoor environments and take actions to limit the second-hand smoke exposure of others. Nevertheless, there is still only a minority support for smokefree beaches and for even partial smokefree outdoor areas around restaurants, cafés and pubs. The particularly strong support for not smoking in cars with pre-school children suggests that New Zealand legislation for this is very feasible.

Health Research Council of New Zealand.

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POS1-2

TAking Cigarettes Out Of PHarmacies — A HISTORICAL OVERVIEW

Maciej L. Goniewicz, Ph.D.*, and Lisa A. Bero, Ph.D., University of California, San Francisco

Methods: We searched the tobacco industry document archive (http://legacy.library.ucsf.edu) and identified over 4,000 documents focused on the relationship of pharmacies and tobacco industry. For this analysis, we selected documents that described policy developments or social movements (n=230) ranging in date from 1960 to 2000. In addition, we searched PubMed and NewsBank databases to identify scholarly articles and media accounts of efforts to ban tobacco sales in pharmacies.

Results: The first activities against selling tobacco products in pharmacies took place in the early 1960’s. The American Pharmaceutical Association (APhA) was the first professional organization that urged pharmacists to cease selling cigarettes in their pharmacies. The APhA in 1970 published recommendation about sale of tobacco products in pharmacies urging that tobacco products should not be sold in pharmacies. Since that time many local, state and national pharmacist organizations have been involved in various social campaigns against selling tobacco in pharmacies. The first sales regulation was introduced in 1993 when the Ontario government introduced legislation banning the sale of tobacco products from drugstores and health care facilities, such as hospitals, clinics and pharmacies. In the U.S., in 1997 Massachusetts introduced sales regulations that restricted advertising of tobacco products in any pharmacy. Finally, on July 29, 2008, the San Francisco Board of Supervisors passed the first ban on selling cigarettes in pharmacies.

Conclusions: Selling tobacco in pharmacies was always in contradiction to the role of the pharmacy as a public health facility. However it took many years to introduce the first bans on selling tobacco in pharmacies. Further intensive efforts must be done to extend these bans throughout the entire U.S. This study was supported by NIH grant # R03 CA113710-01A2

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POS1-3

MOST SMOKERS SUPPORT A DEDICATED TOBACCO TAX INCREASE (ITC PROJECT — NEW ZEALAND)

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Aim: To determine smokers’ support for increases in tobacco tax and for dedicated tobacco taxes in New Zealand (NZ). Methods: This arm of the International Tobacco Control Policy Evaluation Survey (ITC Project) uses as its sampling frame the NZ Health Survey (national sample with boosted sampling of Māori, Pacific and Asians). From this sample we surveyed adult smokers.

Results: Most smokers consider that the current level of tobacco tax is “too high” (68.0%) with 19.9% saying it is “just right” and 5.7% saying it is “too low.” But a majority (59.0%) would support an increase into tobacco tax “if all the extra money was used to promote healthy lifestyles, including helping smokers wanting to quit.” All socio-demographic groups of smokers indicated majority support for such a dedicated increase, but support was significantly higher for Maori compared to all other ethnic groups (adjusted odds ratio [aOR]=1.56, 95%CI=1.10–2.23). Smoking-induced deprivation was the variable predicting most support (aOR=2.64, 95%CI=1.76–3.95; i.e., “Have you spent money on cigarettes that you knew would be better spent on household essentials like food?”). Increased support with decreasing socio-economic position (deprivation) was also significant (aOR=1.09, 95%CI=1.01–1.17). The beliefs that were significant predictors of support for a dedicated tax increase were: (i) belief in tobacco control regulation; (ii) concern around the impact of smoking on future personal health and quality of life; and (iii) intention to quit. In contrast, having self-exempting beliefs was associated with having less support.

Conclusions: A majority of smokers from all socio-demographic groups supported an increase in tobacco tax if it was dedicated to quitting support and health promotion. The relatively higher support by the more deprived, those with smoking-induced deprivation and by Maori, suggest that the desire for quitting support (from dedicated tax funds) outweighs short-term economic self-interest. As the possible adverse effect from tax rises on the worst off has been a major political obstacle to such increases, this finding may facilitate improved policymaking around tobacco tax.

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POS1-4 TRANSLATIONAL SCIENCE: STEPPING OUTSIDE SYSTEMS AND BUILDING BRIDGES
David Young, Ph.D.*, and Ron Borland, Ph.D., Cancer Council Victoria

Translational science is a key process underlying the adoption of contested innovations in the public health field. Our aim is to articulate the principles of translational science, using a comprehensive and original framework, and data from the evolution of smoke-free policies in Ireland, the US, Germany and Australia. We then make recommendations about the role of translational science in an increasingly important, and contested, tobacco control issue; managing product and industry regulation. The framework integrates Systems Theory, used to articulate complex, global issues with many stakeholders, with Actor-Network Theory (ANT), used to describe how innovative and effective interventions in those issues can and should be carried out: something we argue cannot be properly addressed from within existing systems. Systems deal with pre-specified forms of change by way of structural and procedural refinement. However, any change outside their specifications cannot be adjusted to from within existing response repertoires, and response repertoires become ever smaller as systems optimise their capacity. Thus, the systems frame is inappropriate for the contemplation of novel, substantial system changes. ANT is a comprehensive model of innovation processes, specifically designed to understand how systems make such changes. Results indicate successful translations create narratives; tightly woven webs of findings, ideas, theories and values used as tools by the protagonists, and are most powerful when they offer resolution; e.g., smoke-free rules do improve air quality. Our insights belie the idea of best practice: solutions are pursued along different paths in different contexts, not only because of different local norms and precedents, but also because different contexts require involvement of different higher-level systems. Translational science models need refining, and many of the conditions that enabled smoke-free progress, like goal alignment among key protagonists, are not present in product/industry regulation. Understanding how this inhibits action, and developing strategies to overcome it, is crucial for progress in tobacco control.

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POS1-5 COLLEGE STUDENT SMOKERS: A LOOK AT PERCEIVED NORMS, AWARENESS OF CAMPUS POLICIES AND PREFERRED CESSATION METHODS
Denise Rodriguez Esquivel, M.A.*, Jennifer Mahón, Elizabeth A. Baker, B.A., and Monica S. Webb, Ph.D., Department of Psychology, Center for Health and Behavior, Syracuse University

The prevalence of smoking among college students has increased in recent years despite little change in smoking rates among the general population. Tobacco-related policies are known to reduce smoking rates. To decrease smoking among college students, campus policies preventing smoking initiation and cessation programs are being implemented at institutions across the US. The goals of the current study were to (1) assess perceived norms for smoking on college campuses in central New York (CNY), (2) compare smokers and nonsmokers on their views regarding smoking policies, and (3) assess preferred cessation methods among smokers. College students (N = 396) from three CNY colleges and universities completed measures of smoking perceptions and awareness of university smoking policies. Self-identified smokers were asked about cessation program preferences. The mean age of the sample was 20 years (range 18-25), 53% were female, 35% were freshmen, and 23% were smokers. Half were Caucasian and 15% were African American. Results revealed most students believed at least 30% of their campus student body had smoked in the past 30 days, with no difference by smoking status. Most participants (66%) were unaware of their campus smoking policy. Most nonsmokers (52%) disagreed that a campus smoking policy existed. However, 41% of smokers disagreed, while 26% agreed with the statement “I would prefer that smoking was allowed anywhere except for a few areas.” Forty-one percent of smokers preferred individualized cessation meetings, and 25% preferred group meetings. In conclusion, most students were not aware of their campus cigarette smoking policy, which suggests colleges and universities need to educate their students on the consequences of smoking. Well-publicized campus smoking policies have been found to decrease smoking rates among students, so identifying effective ways to communicate these policies to students is important. Almost half of the smokers interviewed preferred individual meetings for smoking cessation; however only 31% of students in the US offer such assistance. Future research should focus on identifying effective ways to communicate campus smoking policies to college students.

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POS1-6 REAL-TIME SECOND HAND SMOKE EXPOSURE AT ENTRANCES TO OFFICE BUILDINGS
Pam Kaufman, Ph.D.1,2,3, Bo Zhang, M.P.H.1, Sue Bondy, Ph.D.1,2, Neil Klepeis, Ph.D.1,2, and Roberta Ferrence Ph.D.1,2,4, Ontario Tobacco Research Unit; 1University of Toronto; Centre for Addiction and Mental Health; 3Stanford University

An unintended consequence of indoor smoking restrictions is the relocation of smoking to building entrances. Smokers who congregate outside buildings may expose non-smokers who are standing nearby or entering and exiting a building to second hand smoke (SHS), and smoke from outdoor areas may drift through entrances, exposing people inside. SHS has been linked to numerous health effects and there is no safe level of SHS. We present data on exposure to SHS inside and outside entrances to office buildings. Real-time air quality monitors were used to simultaneously measure respiratory particulate matter (PM2.5) as a marker of SHS, inside and outside 28 entrances to office buildings in downtown Toronto Ontario, from May to June 2008. Measurements were taken when smoking was and was not present outdoors within 9 metres of entrances. Background levels of PM2.5 (in matched, cigarette-free outdoor spaces) were also measured for each session. A mixed model analysis was used to estimate levels of PM2.5 for SHS, taking into account repeated measures. The average level of PM2.5 in micrograms per cubic meter outside building entrances was 9.1 with no lit ciga- rettes, 15.3 with 1-4 lit cigarettes and 25.0 with 5+ lit cigarettes, while the back- ground level was 9.3. Peak levels of PM2.5 were as high as 496 micrograms/m3 when smoking was present, compared with 155 when no smoking was present. Mixed model analysis shows that the average outdoor PM2.5 was significantly higher than the background level of PM2.5 (p<0.0001), and a number of by time interactions was a significant factor in levels of outdoor PM2.5 (p<0.0001). PM2.5 levels inside building entrances were lower than outdoor background levels, but significantly higher when there was smoking outside the entrances compared to when there was no smoking there. These findings contribute to discussions about the effective- ness of existing indoor legislation to protect people from SHS and have implica- tions for developing evidence-based policy regarding smoking at building entrances. Further, the methodological learnings from this study can inform addi- tional research on outdoor SHS exposure.

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POS1-7 SMOKE-FREE WORKPLACE REGULATION: AIR QUALITY TESTING AND PUBLIC HEALTH IMPLICATIONS IN MONONGALIA COUNTY, WEST VIRGINIA (USA)
Cindy Tiverek, Ph.D., M.P.H.1,2, Valerie Frey-McClung, M.A.1,2, Elizabeth Prengerst, M.S., C.H.E.S.3, and Kimberly Horn, Ed.D., M.S.W.3,4; 1West Virginia University School of Pharmacy; 2Mary Babb Randolph Cancer Center; 3West Virginia University Prevention Research Center; 4West Virginia University School of Medicine

As of 2008, there are only 12 out of 55 West Virginia counties (21.8%) with smoke-free workplaces that include public buildings, businesses, offices, restaurants and bars. Research is needed to study the effects of county-level smoking restrictions on workplace air quality given second-hand smoke exposure among workers and patrons, and is especially important in Monongalia County, which allows smoking in both restaurants and bars. Indoor air quality was assessed during May-July 2007 at 20 Monongalia County hospitality venues that allow smoking. Data were collected using the TSI SidePakAM510 Personal Aerosol Monitor, and each venue was visited for at least 30-minutes. Test venues included: 14 bars; 3 gaming facilities; and 3 restaurants. Monitoring was concealed and samples were collected continuously throughout each visit. Preliminary data reported summaries of average indoor air quality among 17 venues including: 12 bars; 3 restaurants; and 2 gambling facilities. Results showed 17.6% of venues had moderate indoor air quality, while 23.5% tested unhealthy for sensitive groups and an additional 23.5% tested unhealthy, very unhealthy, or hazardous for average air quality among workplaces. Half of all bars with preliminary data also had average indoor air quality reported as unhealthy (in varying degrees) or hazardous. These data present public health implications, in terms of harmful effects to both workers and patrons, which support the need for smoke-free workplace regulation. West Virginia counties that allow workplace smoking should promote air quality and be aware of unhealthy indoor air. Air quality data can be collected and analyzed, and presented to better inform advocates, businesses, and the public to help achieve 100% smoke-free workplace protection.

West Virginia Department of Health and Human Resources, Bureau for Public Health provided funding for this project.

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POS1-9 AN EVALUATION OF THE IMMEDIATE IMPACT OF THE WASHINGTON, D.C. SMOKE-FREE INDOOR AIR POLICY ON BAR EMPLOYEE ENVIRONMENTAL TABACCO SMOKING Exposed Jennifer Pearson, B.A., M.P.H.1, Richard Windsor, M.S., Ph.D., M.P.H.2, Ayman El-Mohandes, M.D., M.P.H.,3, and David C. Perry, Ph.D.4; Dept. of Community Prevention and Health, George Washington University Medical Center

On January 2, 2007, the Washington, D.C. City Council banned smoking in restaurants and bars. This evaluation was conducted to determine the immediate impact of the ban on cotinine confirmed ETS levels and respiratory symptom reports of a random sample of the population employed in DC. A post-ban assessment of 66 employees from 41 randomly selected bars in December 2006. After baseline data analyses, 52 employees were eligible and 49 (94%) had a post-ban assessment in February 2007. Three participants were excluded due to high cotinine levels; symptoms reports were assessed by a standardized, validated form: the International Union Against Tuberculosis and Lung Disease (IUATLD) Bronchial Symptom questionnaire. Employee ETS exposure reports at work were eliminated after the ban. The sensitivity of the symptoms reports was concluded significantly by 69.5-100% (p=0.0016). Reductions in symptoms were concluded to be inclusive of a lack of data. Saliva cotinine median level declined significantly by 70.1% (p<0.0001), from the pre-ban level of 2.11 ng/mL to a post-ban median of 0.29 ng/mL, confirming reports of no ETS exposure at work post-ban. We concluded that the ban was effective and led to elimination of employee ETS exposure reports, dramatically reduced their cotinine levels, and almost eliminated respiratory symptom reports. Future research should define the population of bars/employees, use random sampling procedures, and include large samples of sites/employees. These procedures are essential for an evaluation to have sufficient sample size and statistical power to measure changes in employee pulmonary function and respiratory symptoms. The reduction of baseline cotinine levels has not been confirmed in previous research for this high exposure population, at least two employee pre-ban assessments at >6 months and >3 or <1 month, and two post-ban assessments at >31 and >12 months need to be conducted. Laboratory analyses of saliva samples were supported by the D.C. Department of Health.

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SRN • Poster Session 1

POS1-10 DOES SMOKE-FREE AIR REGULATION AFFECT GAMBLING REVENUE IN WEST VIRGINIA? DON'T BET ON IT

Robert Anderson, M.A., C.H.E.S.1, Cindy Tworek, Ph.D., M.P.H.2,3, and Juhua Luo, Ph.D.1,4; West Virginia University Prevention Research Center; 2West Virginia University School of Public Health; 3Mary Babb Randolph Cancer Center; 4West Virginia University School of Medicine; 1School of Social Development and Public Policy Beijing Normal University

Despite a strong public health case for smoking prohibitions to protect workers and patrons, there has been resistance to enacting smoke-free workplace laws from the gambling industry, which can include casinos, racetracks, or other types of facilities that allow smoking (e.g., gaming machines (EGMs). Since 2004, the West Virginia Lottery Commission has licensed small gambling parlors for EGMs. Few studies have examined the effects of smoking bans on gambling receipts and evidence has been somewhat mixed. This study examines the effects of a comprehensive smoke-free regulation on gambling revenue, which took effect in June 2007, in rural Upshur County, West Virginia, USA. Gambling revenue was compared with a neighboring county similar in demographics and socioeconomic characteristics that permits smoking (Lewis County, West Virginia). Monthly sales data for every licensed electronic gaming machine (EGM) facility in West Virginia were downloaded from the West Virginia Gaming Commission website for each county for each facility for each month from January 1, 2006, to June 30, 2008. By taking account of the possible correlation over time in every licensed EGM location, the Generalized Estimating Equations (GEE) report was used to assess the effect of smoking bans on a county’s total amount wagered per machine. Analyses were adjusted for time trends, seasonal variation, the number of machines in each gambling location, and the amount wagered per machine in the same location prior to the ban. Since smoking was prohibited, there was no significant difference on the amount wagered per machine in Upshur County (p=0.47), Lewis County (p=0.79), both counties (p=0.21), and the state of West Virginia (p=0.32). This study did not find evidence that the timing of the enactment of the smoking regulation had an effect. There are no negative economic effects, in terms of lost gambling revenue to Upshur County, from enacting a smoke-free regulation that protects the health of both workers and patrons. Findings suggest that prohibiting smoking in gambling facilities can be done without economic loss. This research was supported in part, by Cooperative Agreement 5-U48 DP000052-04 from the Centers for Disease Control and Prevention (USA).

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POS1-11 INDOOR SMOKING BANS AND CIGARETTE CONSUMPTION IN LOW SECURITY PRISONS

Ross M. Kaufman, M.P.H.1; The Ohio State University College of Public Health

In recent years an increasing number of American correctional institutions have implemented tobacco restrictions, however little has been done to evaluate the efficacy of these policies. This study examined tobacco use in two Ohio prisons with indoor smoking, the first facility (Prison A) restricted smoking inside buildings, while Prison B additionally prohibited the purchase of tobacco products. Both facilities housed low/medium-security, male inmates. A total of 200 recently admitted inmates, 100 consecutive admissions from each prison (allowing for refusal), were asked about their tobacco use prior to and during their time in prison. Paired t-tests were used to examine changes in cigarette consumption prior to and during incarceration in each facility. Most participants reported smoking cigarettes prior to their arrest at both Prison A (73%) and Prison B (75%). The prevalence of cigarette smoking declined in both facilities during imprisonment to 75% and 85%, respectively. Of those who started smoking cigarettes in prison, half switched from other tobacco products (n=8), a quarter were former tobacco users (n=4), and a quarter first initiated smoking in prison (n=4). Only 4 individuals reported quitting smoking during their time in prison. Nearly all smokers at Prison A (97%) reported using hand-rolled cigarettes, while smokers at Prison B could only use manufactured cigarettes due to institutional policy. In both facilities the average number of cigarettes purchased per day decreased significantly following incarceration. At Prison A, participants consumed an average of 5.3 less cigarettes per day (p<0.001), while use at Prison B declined by 9.0 cigarettes per person (p<0.001). It appears that indoor tobacco bans do reduce cigarette consumption, but do little to promote cessation. The high cost of manufactured cigarettes may help in explaining the slight greater reduction in tobacco use observed among smokers in Prison B. Though an indoor smoking ban and commissary restrictions can promote reduced consumption, separate bans are needed to reduce smoking cessation in prison. This study was conducted at The Ohio State University. It was supported by Grant/Cooperative Agreement Number 1R36DP000052-04 from CDC. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of CDC.
POS1-12

RECENT KEY DEVELOPMENTS WITH TOBACCO CONTROL IN AOTEAROA (NEW ZEALAND) FROM A MÄORI PERSPECTIVE

Heather Gifford* and Shane Bradbrook*; Whakauae Research Services; *Te Reo Marama

Aims: To investigate recent key developments with indigenous tobacco control policies and interventions in Aotearoa/New Zealand.

Methods: The approaches to investigate were selected on the following criteria: (i) they have been developed in Aotearoa/New Zealand since January 2000; and (ii) policies or interventions were developed from a uniquely indigenous perspective. Searches were made in the published and grey literature, and direct experience and observation was also used.

Results: The two main developments identified were: (i) ideas on controls on access or supply of tobacco, and (ii) Mäori-driven tobacco normalisation campaigns. Regarding the former, a complete ban on tobacco sales in Aotearoa/New Zealand has been proposed by key Mäori figures, along with bans on smoking at sites that are culturally significant for Mäori. This has been accompanied by the growth in the use of the term “tukea kore” (tobacco-free). Media and advocacy actions have included the “Mäori Mix”, Mäori Murder and Endangered Species campaigns, targeting the deeds and role of the tobacco industry.

Conclusions: Key Mäori health development principles have been confirmed in the approaches examined. These include developing interventions by Mäori for Mäori, and focusing on strengthened Mäori identity. These principles could be extended to other areas of tobacco control work in Aotearoa/New Zealand and might be of interest to other indigenous populations in other settings. Additional research is required to determine the effectiveness of the approaches. This work was part of background work for the ITC Project (the International Tobacco Control Policy Evaluation Survey) and the Reducing Smoking around Children Policy Research Project, which are supported by the Health Research Council of New Zealand. Participants will be able to describe key indigenous tobacco control efforts in New Zealand over the past five years.

This work was part of background work for the ITC Project (the International Tobacco Control Policy Evaluation Survey) and the Reducing Smoking around Children Policy Research Project, which are supported by the Health Research Council of New Zealand.

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POS1-13

FACTORS ASSOCIATED WITH REPORTING TOBACCO SMOKE ENTERING PRIVATE DWELLINGS

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While most North Americans are protected from exposure to second hand smoke (SHS) at work and in indoor public places, many are still exposed to smoke entering their homes through windows, doors, ventilation systems and other spaces from neighbouring buildings, shared interior spaces and outside buildings. We present population estimates and factors associated with SHS entering the homes of residents of Ontario, Canada. Using Ontario Tobacco Survey cross-sectional data (July 2007-June 2008) from 2,500 adult smokers and non-smokers, we examined the prevalence with which respondents noticed tobacco smoke entering their homes, and for those who noticed, the source other than their own home and factors associated with this. Logistic regression analysis was conducted to estimate odds ratios (ORs) and 95% confidence intervals (CIs), taking into account the complex design of the survey. Factors examined include smoking status, dwelling type, ownership, rules about smoking in the home, household composition, education, age and gender.

Preliminary analyses indicate that approximately 21% (95% CI: 16%-27%) each of never, former and occasional smokers reported noticing SHS entering their home daily or occasionally from a source outside their home. Only 13% (9%-17%) of daily smokers reported this. Never smokers, those living in multi-unit dwellings and those living in a household with nobody smoking inside the home were more likely than daily smokers (OR=1.97; CI: 1.03-3.77), those living in a single-family home (OR=2.44; CI: 1.27-4.71) and those living with someone smoking inside the home everyday (OR=8.69; CI: 1.72-43.84), to report SHS entering into their homes. External sources of cigarette smoke appear to be less salient to smokers and those exposed to smoke in the home. The findings contribute to a growing policy-legacy dialogue concerning protection from involuntary exposure to SHS in private dwellings, and provide insight on where to target smoke-free building initiatives and strategies.

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POS1-14

CARBON MONOXIDE CONCENTRATION IN EXHALED AIR OF SMOKERS AND NON-SMOKERS RESIDENTS IN SÃO PAULO CITY, BRAZIL

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São Paulo is one of the biggest cities in the world. Currently, there are more than 5 millions cars on the streets. Carbon monoxide (CO) is one of the five most important pollutants from automotive cars. CO is also one of the most dangerous products of smoke from cigarettes. Our objective was to verify the concentration of CO in smoker and non-smoker residents in São Paulo city. We performed cross-sectional study involving healthy people. The CO concentration was measured in micro Smokeylifers (Bedfont EC Scientific). We performed the analyses in 562 subjects, separated in 170 non-smokers and 412 smokers. The CO concentration was significantly higher in smokers (22.4) than in non-smokers (3.4 ppm) and there was direct relationship between CO concentration and number of cigarettes smoked independently of gender and age. Smoking overcomes the influence of environmental exposure on CO concentration in human airways. The cigarette consumption is an important determinant of the CO concentration in exhaled air.

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POS1-15

TOBACCO INDUSTRY EFFORTS TO DEFEAT SOUTH AFRICAN TOBACCO CONTROL POLICIES

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Background: During the early 1990s, South Africa had one of the strongest local tobacco industries in Africa and a high adult smoking prevalence (32.6% in 1993). Tobacco control policies, including increased tobacco taxation, advertising bans, and clean indoor air laws, began to be introduced in the early 1990s. The tobacco industry engaged the South African Ministry of Health and anti-smoking groups in fierce political battles over these policies.

Objective: To examine tobacco industry tactics and responses against new tobacco regulations proposed in South Africa during the 1990s. Design: Analysis of internal industry documents from the Legacy Documents Library and literature review including Medline and Google.

Results: Internal tobacco industry documents reveal that BAT and Rembrandt were directly involved in the effort to shape the regulatory framework for tobacco control in South Africa during the 1990s. Documents show that the tobacco industry cultivated ties to South African political leaders, tobacco growers, academics, media, and think tanks to deliver arguments on the industry’s behalf. Specifically, the documents suggest that they attempted to utilize some third party affiliates to combat anti-tobacco efforts such as the 1993 All-Africa Tobacco Conference. The industry also crafted public affairs strategies against proposed legislation that included tactics borrowed from successful Latin American marketing efforts, and developed racially targeted branding strategies aimed at increasing smoking among African and mixed race residents of post-apartheid South Africa. Review of the literature and internal documents suggests that ultimately the tobacco industry was successful in delaying but not defeating tobacco control efforts in South Africa during the 1990s.

Conclusion: Internal documents reveal that the tobacco industry engaged in efforts to delay and defeat novel post-apartheid tobacco control measures. Understanding these industry strategies, and the successful South African government and tobacco control coalition responses to them, can be instructive to other African countries battling the African smoking epidemic in the 21st Century.

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POSI-16
DIFFERENCES BY ETHNICITY BUT NOT BY DEPRIVATION IN SMOKERS’ USE OF, AND BELIEFS ABOUT, “LIGHT” CIGARETTES (ITC PROJECT – NEW ZEALAND)

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Aim: To determine smokers’ use and beliefs concerning “light” and “mild” cigarettes (“lightts”) by ethnicity and deprivation in New Zealand (NZ).

Methods: The NZ arm of the International Tobacco Control Policy Evaluation Survey (ITC Project) uses as its sampling frame the NZ Health Survey. This is a national sample with boosted sampling of Māori, Pacific and Asians.

Results: The independent probability of being a “lights” smoker decreased among Māori (adjusted odds ratio (aOR) = 0.52, 95% CI: 0.35 - 0.77) and for Pacific people (aOR=0.12, 95% CI: 0.04 - 0.34) compared to other ethnic groups (European and Asians). This was despite no statistically significant differences for these ethnic groups in beliefs that “lights” have some benefits for health. There was no independent association between socio-economic position (deprivation) and using “lights” or belief in health benefits of lights. All smokers of “lights” were significantly less likely to be planning such an attempt in the next month. Most “lights” smokers believed that “lights” have some benefits for health than regular cigarette smokers but were no more likely to have made a previous quit attempt than standard smokers. They were significantly less likely to be planning such an attempt in the next month. Most “lights” smokers believed that “lights” have some benefits for health than regular cigarette smokers (69% vs. 45%; aOR=1.87, 95% CI: 1.27 - 2.74). However smokers of “lights” were no more likely than regular smokers to have made a previous quit attempt. They were even significantly less likely to be planning such an attempt in the next month (significant in the univariate analysis only).

Conclusions: Māori and Pacific smokers are less likely to use “lights”, but the reason for this is unclear and warrants further research (particularly since these groups have higher than average smoking prevalence). Our findings are compatible with work in other countries and indicate that “lights” are being mis-used to believe that “lights” are less harmful than regular cigarettes. Governments should act to address misleading tobacco marketing as per the Framework Convention and to even go beyond this to require plain packaging for all tobacco products.

Health Research Council of New Zealand.

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POSI-17
IMPACT OF A CAMPUS-WIDE TOBACCO BAN: CANCER CENTER EMPLOYEE ATTITUDES AND SMOKING BEHAVIOR

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Policies restricting indoor tobacco use at worksites began being implemented over a decade ago, as research started to demonstrate the ill effects of secondhand smoke. More recently, the scope of these policies has been expanding, with hospitals leading the trend to restrict tobacco use throughout their grounds. However there is a dearth of research on the effects such bans have on employees and their tobacco-use patterns. The current survey study examined the impact of a complete campus-wide smoking ban on employees of a comprehensive cancer center. Employees completed an anonymous questionnaire during the month before the ban (n=610; 12% smokers), and three months following the ban implementation (n=369; 9% smokers). Post-ban results showed that 89% of nonsmokers supported the campus-wide ban, while only 14% of smokers were in favor of a complete campus-wide smoking ban. A significant majority of employees supported the smoking ban, whether or not they were smokers. Employee support for the smoking ban was not related to smoking status, age, gender, or employment classification. However, there were differences in support for the smoking ban based on race/ethnicity. Employees supported the campus-wide ban, while only 14% of smokers were in favor of a complete campus-wide smoking ban (European and Asians). This was despite no statistically significant differences for these ethnic groups in beliefs that “lights” have some benefits for health. There was no independent association between socio-economic position (deprivation) and using “lights” or belief in health benefits of lights. All smokers of “lights” were significantly less likely to be planning such an attempt in the next month. Most “lights” smokers believed that “lights” have some benefits for health than regular cigarette smokers but were no more likely to have made a previous quit attempt than standard smokers. They were significantly less likely to be planning such an attempt in the next month. Most “lights” smokers believed that “lights” have some benefits for health than regular cigarette smokers (69% vs. 45%; aOR=1.87, 95% CI: 1.27 - 2.74). However smokers of “lights” were no more likely than regular smokers to have made a previous quit attempt. They were even significantly less likely to be planning such an attempt in the next month (significant in the univariate analysis only).

Conclusions: Māori and Pacific smokers are less likely to use “lights”, but the reason for this is unclear and warrants further research (particularly since these groups have higher than average smoking prevalence). Our findings are compatible with work in other countries and indicate that “lights” are being mis-used to believe that “lights” are less harmful than regular cigarettes. Governments should act to address misleading tobacco marketing as per the Framework Convention and to even go beyond this to require plain packaging for all tobacco products.

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POSI-18
GLOBAL VOICES: WORKING FOR SMOKEFREE AIR

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Background: This session will discuss the GSP Global Voices 2008 report, including: 1) a map presenting the progress towards smokefree worldwide; 2) a brief summary of the arguments used to plead the case for smokefree policies; 3) an outline of tobacco industry tactics in opposition to smokefree policies; 4) an explanation of seven core principles for how to promote effective smokefree policies; and 5) an overview highlighting those countries currently taking action.

Objectives: To make the case for smokefree policies worldwide. By presenting and examining the findings of this global status report on smokefree policies, presenters will address the following questions: What do we mean by smokefree policies? How do smokefree policies protect worker health? How are countries taking action? What is the FCTC? What are countries obliged to do?

Results: Nine countries have adopted smokefree laws — Bermuda, Iran, New Zealand, Northern Ireland, Scotland, Uruguay, Wales, and England. Subnational jurisdictions in the USA, Canada, Australia, and Argentina have adopted similar laws. As of July 1, 2007, more than 200 million people are protected from the dangers of secondhand smoke. The success of existing smokefree places confirms that the momentum towards comprehensive smokefree laws is now unstoppable.

Conclusions: Evidence from the implementation of comprehensive smokefree laws shows that these policies improve worker health, are cost effective, and popular. In addition, new smokefree policy initiatives worldwide demonstrate that governments around the world are continuing to become engaged in supporting smokefree air policies.

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POSI-19
MOST SMOKERS SUPPORT MORE TOBACCO PRODUCT REGULATION AND MORE GOVERNMENT ACTION ON TOBACCO CONTROL (ITC PROJECT: NEW ZEALAND DATA)

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Aim: To determine smokers’ support for tobacco advertising restrictions, tobacco product regulation and additional government action for tobacco control.

Methods: The New Zealand arm of the International Tobacco Control Policy Evaluation Survey uses as its sampling frame the New Zealand Health Survey (a national sample with boosted sampling of Māori, Pacific and Asian New Zealanders). From this sample we surveyed adult smokers using standard ITC Project procedures. Results: Most smokers agreed ("strongly agree/"agree") that tobacco products should be more tightly regulated (85%), and that the government should do more to tackle the harm caused by smoking (59%). Most (69%) disagreed ("strongly disagree") that tobacco companies should be allowed to advertise and promote cigarettes as they please. Views on tobacco advertising differed little by ethnicity or socio-economic deprivation level. Māori (OR=1.41 95% CI 1.04 to 1.91) and Pacific (OR=1.68 95% CI 0.92 to 3.04) smokers were more likely to support tightening regulation of tobacco products. Māori (OR= 1.71 95% CI 1.28 to 2.30), Pacific (OR=3.19 95% CI 1.71 to 5.95) and Asian (OR=3.47 95% CI 1.67 to 7.19) smokers were more likely to agree with more government action on tobacco control compared with European/others. Socio-economically deprived smokers and smokers experiencing economic hardship were more likely to agree with greater government action e.g. OR 1.93 (95% CI 1.14 to 3.26) among smokers from the most deprived quintile vs. the least affluent quintile, and for smokers suffering financial stress due to being unable to pay bills on time (OR= 2.16 95% CI 1.18 to 3.96). The relationship between deprivation and support for greater product regulation was less consistent. Conclusions: Most New Zealand smokers support more regulation of tobacco products, more government action against smoking, and restrictions on tobacco advertising. This finding is similar to other ITC Project survey countries. There was also greater support for product regulation among non-European smokers, and for more government action on tobacco control among non-European and more socio-economically disadvantaged smokers.

Health Research Council, New Zealand.

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### POSI-20
**PREFERENCES AND PRACTICES REGARDING SMOKE-FREE POLICY IMPLEMENTATION AMONG OWNERS AND MANAGERS OF MULTI-UNIT HOUSING**


Objective: An increasing number of communities have chosen to implement smoke-free policies in public places, including bars and restaurants. However, policies restricting smoking in personal living spaces, including multi-unit housing (MUH), are virtually nonexistent. Since the implementation of such policies remains controversial, there is a need for credible data from key stakeholders. Consequently, the objective of this study was to assess the preferences and practices of MUH owners/managers with regard to smoke-free policy implementation in their buildings.

Methods: A telephone-based survey was administered to a random sample of owners/managers of Western New York (WNY) apartments identified through the North American Industry Classification System. A total of 127 individuals completed the survey between March and July 2008 (51% response rate). A logistic regression model was used to assess predictors of policy implementation and support while adjusting for participant smoking status, quantity of units owned/managed, low income public housing status, as well as building age, construction type, and size.

Results: Only 13% of participants reported having a policy prohibiting smoking inside apartment units, with owners/managers of buildings with 150 or more units being less likely to have such a policy [OR: 0.15, 95% CI (0.03-0.87)]. Among those without a smoke-free policy, 75% would be interested in restricting smoking in at least one of their units, with interest being significantly higher among owners/managers with low-income public housing units [OR: 3.12, 95% CI (1.14-8.59)]. The most frequently reported barriers to policy implementation included concerns over higher vacancy rates (27%), a decreased market base (21%), and the infringement of tenants’ rights (12%).

Conclusions: A majority of WNY MUH owners/managers are failing to protect their tenants from involuntary SHS exposure; however, most would be interested in implementing smoke-free policies. Consequently, promising opportunities exist for educational-based efforts to assist MUH owners/managers in accepting, implementing, and enforcing such policies.

This study was funded by the Erie-Niagara Tobacco-Free Coalition through a grant from the New York State Department of Health.

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### POSI-21
**TAXATION REDUCES SOCIAL DISPARITIES IN ADULT SMOKING PREVALENCE**

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Aim: To assess the extent to which the association of monthly cigarette price and smoking prevalence varies by income group.

Methods: Monthly Australian population survey data between January 1991 and December 2006 were used to estimate Poisson regression models to assess the impact of the price of cigarettes on smoking prevalence across three income groups.

Results: There was strong evidence that price and prevalence were negatively associated (p < 0.001), and that the association was stronger in lower income groups (p < 0.001). One dollar increase in price was associated with a decline of 2.4%, 0.6%, and 0.0% in the prevalence of smoking among lower, medium, and higher income groups, respectively.

Discussion: Increasing the price of cigarettes is not just an effective tobacco control strategy to lower smoking prevalence in the general population, but may also provide a means of reducing social disparities in smoking.

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### POSI-22
**DOES PRICE ELASTICITY OF CIGARETTE DEMAND VARY WITH THE SIZE OF TAX CHANGES?**

Rita Luk, M.A.*, and Joanna E. Cohen, Ph.D., Ontario Tobacco Research Unit, University of Toronto.

Objective: We tested the hypothesis that the price elasticity of cigarette demand is greater for larger tax increases than for small increases. If cigarette consumption is proportionately more responsive to price change for large cigarette tax increases, because large tax increases could draw more public attention and have greater impact on smokers’ spending, such findings would have important implications for how to implement cigarette taxation as a tobacco control strategy.

Methods: Tax-paid cigarette sales, inflation adjusted retail cigarette prices and tax data for each of the ten Canadian provinces from 1981 to 1999 were used. We used a fixed effects model to control for unobserved heterogeneity across provinces, and used years of data with no extensive smuggling. The effect of the size of tax changes on cigarette price elasticity was estimated separately for the tax change size (1) as a continuous variable and (2) as a binary variable which tested the hypothesis that the price elasticity of very large tax changes (tax change size being in the top 15 percentile of our data) is larger than that of smaller tax changes. The size of tax changes was measured both in absolute terms and as a percent change.

Results: When tax change size was measured in absolute terms, the estimated coefficient measuring its effect on price elasticity was negative, suggesting an increase in price elasticity as the size of tax changes increased. However, the magnitude of the effect was small and the coefficient was not statistically significant. When the size of tax changes was computed as percent change, the estimated coefficient was positive and was not statistically significant. This result hold whether the size of tax changes entered the model as a continuous or a binary variable.

Conclusions: Our results did not support the hypothesis that cigarette demand would be more responsive to price changes when tax increases are larger than when the increases are small. However, it would be useful to triangulate these results using different data and methods.

This research was conducted at the Ontario Tobacco Research Unit, which receives funding from the Ontario Ministry of Health Promotion.

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### POSI-23
**THE ECONOMIC RELATIONSHIPS BETWEEN THE TOBACCO INDUSTRY AND PHARMACIES**

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Objectives: The selling of tobacco products at pharmacies is an ethical and economic dilemma for pharmacists. The goal of this study was to examine economic aspects of the relationship between the tobacco industry and pharmacies in the United States and Canada.

Methods: We searched the tobacco industry document archive (http://legacy.library.ucsf.edu) and identified over 4,000 documents focused on the relationship of pharmacies and tobacco industry. For this analysis, we selected documents that described financial relationship (n=80) ranging in date from 1960 to 2000. Secondary data (mainly media articles) were also identified and included into analysis.

Results: The tobacco industry closely monitored tobacco sales at pharmacies. The companies developed marketing and promotion approaches in order to maximize tobacco sales through pharmacies. Moreover, the tobacco industry formed financial ties to pharmacies to pressure them to sell tobacco. Pharmacists were paid directly to place cigarette displays at the cash register or checkout counter (more than 105 per year). The tobacco industry policy was to delay receiving payments from pharmacies until a few days (even up to one month) after the sale of the tobacco products, so the transaction was similar to an interest-free loan. The economic aspects of the sale of tobacco products in pharmacies has been a key argument used by the tobacco industry against any attempt to ban sales of tobacco products in pharmacies. Pharmacists were threatened with losing their profits from selling tobacco products. One of the most evident examples of the economic relationship between tobacco industry and pharmacies occurred during the 1980s when Canada’s largest cigarette manufacturer purchased the largest retail pharmacy in Canada. Conclusions: The economic relationship between the tobacco industry and pharmacies is very strong. The tobacco industry used various methods to keep the relationship close and stable, thereby discouraging pharmacies from banning tobacco sales.

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POS1-24 THE IMPACT OF PREEMPTION ON PUBLIC SUPPORT FOR SMOKE-FREE POLICIES
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In this study, we focus on the impact of state laws that preempt local laws regulating smoking in enclosed public places including workplaces, restaurants, bars, and other public places. We documented the effect of state provisions preempting local smoking restrictions on: (1) the number of local smoke-free ordinances, (2) the proportion of indoor employees covered by 100% smoke-free workplace policies, and (3) support for smoke-free policies in various public settings. The proportion of workers protected by smoke-free workplace policies, and public support for smoke-free air, were assessed using the 2001-2002 Tobacco Use Supplement to the Current Population Survey. Preemptive legislation, state smoke-free air laws, and the number of local smoke-free laws were assessed using data from The Centers for Disease Control and Prevention STATE database, the University of Illinois at Chicago ImpactTean database, the American Lung Association’s State Legislative Actions on Tobacco Issues database, and the Americans for Nonsmokers’ Rights Foundation U.S. Tobacco Control Database®. The number of states with preemptive stronger local smoking restrictions increased sharply in the 1990s. As of December 31, 2001, a total of 18 states had preemptive provisions in smoke-free indoor air laws. By 2001, U.S. municipalities had passed a total of 3,292 ordinances restricting smoking in one or more public places. The mean number of laws in preemption states was 34.8. Non-preemption state had passed on average 80.8 laws. Based on a multivariate model, state preemptive laws were associated with reduced support for smoke-free environments in indoor workplaces among both current and former smokers. State preemptive provisions were also associated with a reduced level of worker protection from secondhand smoke. The study suggests that state smoke-free air laws should always include explicit anti-preemption language.

This study was supported by the Centers for Disease Control and Prevention, Office on Smoking and Health.

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POS1-25 SMOKERS ATTITUDES TOWARD GOVERNMENT INTERVENTION IN THE TOBACCO INDUSTRY: FINDINGS FROM THE ITCS SURVEYS
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The aim is to examine smokers’ support for increased government intervention in the tobacco industry in a diverse range of countries. ICT surveys are conducted on smokers, using samples that are representative of the smokers in a given country, or specific regions of a country, employing either telephone or face-to-face surveys. As part of the surveys, respondents were asked about their support for greater government intervention in/regulation of, the tobacco industry. The results reported are drawn from nine countries (USA, Canada, UK, Australia, Thailand, Malaysia, China, Uruguay, Mexico). The strongest support for government intervention came from Asian countries (e.g., China, Malaysia around 80%) and the lowest support came from the USA (around 45%). The impact of socio-demographic variables on attitudes to government intervention was different across the range of countries studied. However, there was more consistency in the relationships between smoking-related beliefs and attitudes and attitudes toward intervention. Opposition to regulation came from smokers holding self-exempting beliefs about the risks of smoking, with positive attitudes to smoking, who do not accept smoking is normalised, and do not hold tobacco companies responsible for the harm, suggesting that most opposition comes from those who are poorly informed. Overall, these findings support the belief that there is strong community support for intervention in the tobacco industry and market, especially in the Asian countries studied. The most notable exception to the almost universal support was the US. US smokers appear to have less confidence in the capacity of governments to act in their interests, the culture of the US places an emphasis on individual responsibility, and the norm is illusion rather than regulation. What is important is that governments in many parts of the world can implement the FCTC policies knowing that smokers are likely to support increased intervention and robust tobacco control policies.

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POS1-26 LONG-TERM COMPLIANCE WITH NEW YORK STATE’S CLEAN INDOOR AIR ACT AMONG BARS, RESTAURANTS, AND BOWLING FACILITIES IN ERIE AND NIAGARA COUNTIES

Objective: Effective July 24, 2003, the New York State Clean Indoor Air Act (CIAA) was amended to prohibit smoking in virtually all workplaces, including hospitality venues such as bars/taverns, restaurants, and bowling facilities. The objective of this study was to evaluate the extent to which hospitality venues throughout the New York State Counties of Erie and Niagara were in compliance with the CIAA nearly five years after its implementation.

Methods: Data were obtained from a random sample of venues within Erie and Niagara Counties registered as restaurants, bars/taverns, or bowling facilities through the North American Industry Classification System (NAICS). Observational assessments of 581 venues were completed on-site by trained surveyors from December 2006 to June 2008 between 7 p.m. and 2 a.m., Thursday through Sunday. Non-compliant venues were defined as those in which a patron or employee was observed actively smoking inside the establishment at the time of assessment. Venues with active CIAA waivers were verified through the New York State Department of Health.

Results: A total of 4% of venues without active CIAA waivers (n=569) were found to be non-compliant with the CIAA at the time of assessment. No restaurants or bowling facilities were found to be non-compliant; however, active smoking was observed in 9% of assessed bars, with the quantity of active smokers ranging between one and five. Among the twelve assessed venues with current CIAA waivers, active smoking was observed in only one restaurant and two bars/taverns.

Conclusions: A vast majority of Erie and Niagara County hospitality venues are compliant with the New York State CIAA nearly five years after its implementation; however, a minority of bars/taverns and restaurants continue to violate the law. Consequently, programs should target their limited enforcement resources toward this segment of establishments.

This study was funded by the Erie-Niagara Tobacco-Free Coalition through a grant from the New York State Department of Health.

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POS1-27 LONG-TERM ASSESSMENT OF WESTERN NEW YORK TOBACCO RETAILER MARKETING PRACTICES

Objective: The tobacco industry spent $9.78 billion dollars on advertising and promotional expenses in 2005 alone on retailer and consumer incentives to stimulate cigarette sales at the point-of-purchase. These advertisements and promotions increase tobacco consumption by reinforcing the normative impact and social acceptability of tobacco use. Consequently, the objective of this study was to assess long-term trends in point-of-purchase tobacco product sales and marketing among Western New York tobacco retailers.

Methods: Data were obtained from a random sample of licensed tobacco product retailers identified through the New York State Department of Tax and Finance. On-site observational assessments of 437 retailers within the New York State Counties of Erie and Niagara were completed by trained surveyors between June and July 2006. The assessment instrument addressed indicators related to tobacco product advertising and promotion, age-of-sale signage, and counter-marketing. A total of 340 retailers were followed-up between April and August 2008 and McNemar’s test was used to evaluate significant changes in these indicators over time.

Results: A total of 315 (93%) of the licensed tobacco retailers assessed at baseline remained in business at follow-up. Among these retailers, the proportion who did not sell any form of tobacco products increased by nearly 58% (5.3% to 8.3%) between 2006 and 2008 (p<0.01). Similarly, the proportion of retailers with no visibility of tobacco promotions increased by 46% (5.7% to 10.5%) over the same time period (p<0.01). A 13% (52.3% to 59.9%) increase was also observed in the proportion of tobacco retailers with governmental age-of-sale signage (p<0.05).

Conclusions: These findings suggest that a growing number of Erie and Niagara County retailers are voluntarily choosing to stop selling and marketing tobacco products in their establishments. Efforts to decrease the extent of tobacco product advertising and promotion at the point-of-purchase may be effective in reducing tobacco consumption and reinforcing emergent smoke-free norms.

This study was funded by the Erie-Niagara Tobacco-Free Coalition through a grant from the New York State Department of Health.

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**POS1-28 EFFECTIVENESS OF DIFFERENT STYLES OF CORRECTIVE STATEMENTS ADS**

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Background: In August 2006, a US Federal Court ruled that the major domestic cigarette manufacturers were guilty of conspiring to deny, distort, and minimize the hazards of cigarette smoking to the public. Among the various remedies ordered by the Judge was a requirement that manufacturers disseminate statements to the public that would correct past misstatements about the health effects of smoking, addiction, product manipulation, low tar cigarettes, and secondhand smoke.

Objective: This study evaluates various versions of corrective statements that were proposed to the Court to determine differences in how the statements are perceived by adult smokers.

Methods: A total of 240 adult smokers were randomized to one of five types of corrective statement styles each of which included five topic areas: smoking health effects, addiction, product manipulation, low tar cigarettes, and secondhand smoke. Three of corrective statement styles were text based statements recommended to the court by different parties in the case (Claimants, Defendants, and Interveners), while two others were developed for this study and utilized different pictures and word stems. Subjects were recruited through online and newspaper advertising in the Buffalo, NY. After viewing a corrective statement ad, subjects completed a brief questionnaire asking them to rate the ad on various dimensions reflective of the ads persuasiveness and believability.

Results: All five styles of the corrective statements were somewhat effective in correcting misperceptions held by smokers. For example, before viewing any of the ads, 81% of smokers answered that the words “low tar” on cigarette packs meant that smokers got less tar from the cigarette than the current corrective statement this number dropped to 34%. However, different corrective statement ads were rated as more persuasive and believable by respondents. The corrective statements recommended by Defendants were rated least persuasive and believable while the corrective statements recommended by Interveners and those utilizing a personal testimonial were rated as most persuasive and believable.

Robert Wood Johnson Foundation.

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**POS1-30 PREDICTORS AND DIRECTIONALITY OF SMOKERS’ RATIONALIZATION AND REGRET: FINDINGS FROM THE INTERNATIONAL TOBACCO CONTROL (ITC) POLICY EVOLUTION PROJECT**

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Many smokers express a desire to quit, yet they are often unsuccessful in their quit attempts. When confronted with the discrepancy between their desire to quit and continued smoking, smokers commonly experience psychological discomfort and try to reduce this discrepancy by adopting rationalizations. Yet, smokers may accept the continuation of quitting, and thus, may not regret their predicament. Smokers’ perceptions and rationalization appear to be related psychological experiences. The goal of our paper was to examine various predictors of rationalization and regret among adult smokers, and to determine how these variables are related with each other. To assess these perceptions, we analyzed data from Wave 1 to Wave 5 of ITC. Using structural equation modeling, we examined the predictors and the pathways of smokers’ rationalization and regret. The data were from Wave 1 of the ITC Policy Evaluation Southeast Asia Survey, a cohort survey of representative samples of adult smokers in Thailand (N=2,000) and Malaysia (N=2,006). We found that various variables predicted both rationalization and regret in the opposite directions. Thai smokers were less likely to rationalize, but more likely to regret than Malaysian smokers. Smokers who smoked first thing in the morning were less likely to rationalize, but more likely to regret. Smokers who received higher school education were less likely to rationalize, but more likely to regret. Smokers who did not get support from their family were more likely to regret. Smokers who had higher smoking taxes paid were less likely to regret. Finally, we found that smokers with higher income were more likely to regret.

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**POS1-29 HAVE CANADIAN INVESTMENTS IN TOBACCO CONTROL RESEARCH CAPACITY BUILDING CHANGED EFFECTIVE? TRENDS IN PUBLICATION OUTPUTS, 2002-2007**

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Objectives: Several Canadian funders have made significant investments over the past five years to build research capacity for tobacco control research. One such investment has been in the funding of the Interdisciplinary Capacity Enhancement-Pan-Canadian Resource Network (ICE-PRN). One of many indicators of research capacity is peer-reviewed publications. Therefore, this study assessed and tracked tobacco control publication output (from 2002-2007) among authors of research capacity building investments. The present study represents the first preliminary insight into tobacco control research capacity in our country. The methods used were secondary analysis and linking of three data sources from: (1) the research database, SCOPUS, including results of a systematic search for publications with at least one author that had a Canadian affiliation; (2) ICE-PRN project data, containing the names of those authors who were affiliated with the network; and (3) ISI Web of Science records to analyze journal subject areas, country of publication, and impact factors.

Results: 1,687 authors with a Canadian-affiliation published 1,029 papers in 456 unique journals between 2002 and 2007. Papers appeared most commonly in public health and tobacco-related journals. The number of papers published increased over time (139 in 2002; 233 in 2007) and authors affiliated with the ICE-PRN project demonstrated greater growth.

Implications: Results suggest changes in publication patterns correspond to research capacity building investments. The present study represents the first analysis of tobacco control-related publications by Canadian-affiliated authors and preliminary insight into tobacco control research capacity in our country. The methods used could be replicated for other countries.

Funding for this research was provided by the Canadian Tobacco Control Research Initiative and the Interdisciplinary Capacity Enhancement-Can-Canadian Resource Network. Sarah Viehbeck is a research trainee with the Canadian Institutes of Health Research-Strategic Training Program in Tobacco Research.

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**POS1-31 ETHNICITY PREDICTS PERCEPTIONS OF SMOKING AND SMOKING CESSATION AMONG VETERANS**

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Evidence suggests that African-American smokers may have an increased prevalence of tobacco-related illnesses. While African-Americans smoke fewer cigarettes per day and have a later onset of smoking, they are often less successful in cessation attempts than White smokers, perhaps due to differences in perceptions about smoking and cessation services. To determine if ethnicity predicts perceptions about smoking and smoking cessation services, data was collected using a self-administered survey among a convenience sample of inpatient, outpatient, and residential smokers (N=146) at a primarily veterans Psychiatric Affairs (VA) hospital. Means and frequencies were calculated for all variables. Multivariate logistic regression models were used to determine the association between ethnicity and perception of importance of quitting smoking to health, thinking of quitting smoking in the next 30 days, and interest in receiving smoking cessation services. Forty-six percent of smokers were non-White, of which most (n=50) were African-American. The average age was 50, most (96%) were male, and only 17% were employed. More than two-thirds (67%) thought that smoking was very or extremely important to their health. However, only 35% were thinking of quitting in the next 30 days. More than half (53%) were interested in receiving tobacco cessation services. After controlling for age, gender, ethnicity, non-Whites were less likely to think of quitting in the next 30 days (OR=2.591, p<0.05) and nearly 3 times more likely to be interested in cessation services (OR=2.868, p<0.01) compared to Whites. There were no differences by ethnicity regarding thinking that quitting smoking would be important to health. These findings indicate that cessation interventions need to be provided to all interested smokers, interventions to actively quit may be of greater value to non-Whites while interventions to increase motivation to quit may be of greater value for White veteran smokers.

This study was conducted while the first author was at the Ann Arbor VA Center for Clinical Management Research Health Services Research and Development. This study was supported by the Department of Veterans Affairs (IUSD 06-003 and Rapid Response Proposal 07-037).

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**POS1-32**  
THE OVERLAP OF TOBACCO USE WITH DEPRESSION AND ANXIETY IN PRIMARY CARE  
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Aim: Tobacco use is a leading cause of preventable death in the U.S. Mood disorders often coexist with tobacco use, but the degree to which this occurs in primary care has not been well studied. The objective was to determine the coexistence of mood disorders with tobacco use in primary care.  
Methods: Consecutive adult (age 18+) patients from 24 geographically dispersed primary care practices in Michigan were surveyed using an anonymous written questionnaire. The survey assessed tobacco use (current and past cigarette use, number of cigarettes/day, smoking upon awakening, and other tobacco use) and mood disorders (PHQ-8 for depression; GAD-7 for anxiety).  
Results: This dataset represents a total of 3034 surveys (83.4% response rate). Respondents were 66% female, with an average age of 49.5 years, 76% were white, 7.6% were black, 11% were of other races, and a mean age of 49.5. Tobacco smoking rate overall was 24%. The prevalence of other tobacco use was 6%. Unadjusted logistic regression analysis shows an increase in the likelihood of smoking with increasing levels of depressive symptoms (OR=1.08; 95% CI 1.06-1.10; p<.001). A similar result was found for anxiety symptoms (OR=1.11; 95% CI 1.08-1.13; p<.001). Multivariate logistic regression revealed that, adjusting for age, gender, level of education and race/ethnicity, both relationships remain statistically robust, although somewhat attenuated. Smokers were more likely than non-smokers to have suffered from one or more episodes of depression (OR=1.85; 95% CI 1.5-2.2; p<.001) and to be on antidepressant medications (OR=1.6; 95% CI 1.3-2.0; p<.001). There was a positive relationship between number of cigarettes smoked per day and smoking upon awakening and level of depressive (p<0.5), but not anxiety symptoms (NS). Smokers overall expressed sentiments of quitting with the statement that they were saying “what” and “very” motivated to quit smoking.  
Conclusions: The presence of concurrent smoking and depressive and anxiety symptoms are prevalent within community primary care medical practices. Interventions that target tobacco cessation in the context of mood disorders are warranted.  
American Academy of Family Physicians Foundation.  
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**POS1-33**  
Background: Varenicline (Chantix® in the US and Champix® in Europe and other countries) is a new prescription stop smoking medication (SSM) that has been available in the United States since August 1, 2006 and in the United Kingdom since July 2006. Initial clinical studies have indicated that Varenicline has greater clinical efficacy than other SSMs. This study presents data on smokers reported use of varenicline compared to nicotine replacement therapies (NRTs) and bupropion between 2006 and 2007.  
Methods: We report data on 1,656 smokers who completed the 2006 wave and 1,550 smokers who completed the 2007 wave of the International Tobacco Control (ITC) Four Country Survey and who resided in the United States or the United Kingdom, and who reported an attempt to quit smoking in the past year. Both surveys were conducted at the same time of year between October and January. Respondents reported use of various stop smoking medications at both waves, along with demographics and smoker characteristics.  
Results: In 2006 among US smokers who reported making a quit attempt, 27.1% reported using any SSM — with 21.4% reporting use of NRT, 5.2% using bupropion, only 0.3% using varenicline. In the UK among those who made a quit attempt, 39.1% reported using any SSM, with 37.1% using NRT, 1.9% using bupropion and no one reporting use of varenicline. In 2007, the percentage of US smokers who reported making a quit attempt using any SSM increased to 32.8%, with 26.5% reporting use of NRT, 3.5% using bupropion, and 9.0% using varenicline. In the UK, the use of any SSM was 37.6% with 31.2% using NRT, 0.9% using bupropion, and 1.1% using varenicline.  
Conclusions: Since varenicline was introduced in 2006 it has become the second most used SSM in both the US and UK, although usage rates are much higher in the US. In both countries, NRT remains the widely used SSM. At this point it is still too early to tell if varenicline is merely displacing the percentage of smokers who are opting to use medication to assist their quit attempt.  
Funding for this research was provided by grants from the National Cancer Institute of the United States (through the Transdisciplinary Tobacco Use Research Center, F50 CA111236), the Canadian Institutes of Health Research (79551), Cancer Research UK (C312/A3726), and the Flight Attendants Medical Research Institute.  
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**POS1-34**  
CHANGES IN SMOKING STATUS OVER ONE-YEAR IN A POPULATION-BASED COHORT OF SMOKERS  
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Introduction: Few studies have examined the stability and variability in smoking behaviour over time, outside of intervention settings. This report describes the stability and predictors of change in smoking status among recent smokers over one year, using a three-state Markov smoking model.  
Method: Data are from smokers in The Ontario Tobacco Survey longitudinal study (smoked within 6 months of recruitment from July 2005 through December 2006). Participants were classified as daily smokers, non-daily smokers or recent quitters (not smoked within 30 days) at baseline, 6- and 12-month interviews. Regression models examine factors associated with different changes in status categories.  
Results: Of 1697 individuals with complete follow-up data at six and twelve months, 72% had the same smoking status at all three interviews, while another 8.7% had a different smoking status at every interview. Daily smoker was the most stable category with 83.2% remaining such over one year. Roughly half of non-daily smokers remained such in months later, with roughly equal numbers shifting to daily smoking or cessation. Characteristics of people moving from daily to non-daily smoking were the same as those quitting altogether (e.g., intentions to quit and lower dependence); younger respondents were more likely to shift to non-daily smoking as opposed to quitting. Shorter time since last cigarette was associated with relapse to non-daily smoking. Recent quitters using pharmaceutical aids had a high risk of returning to daily smoking.  
Conclusion: Understanding the natural course of smoking behaviour change is important to inform and evaluate policies and cessation programming.  
This research was conducted by The Ontario Tobacco Research Unit, which receives funding from the Ontario Ministry of Health Promotion.  
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**POS1-35**  
STAFF ATTITUDES TOWARD THE DELIVERY OF TOBACCO CESSATION SERVICES IN A PSYCHIATRIC VETERANS AFFAIRS HOSPITAL  
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Smoking is associated with psychiatric comorbidities both of which are higher among veterans compared to the general population. Staff members who work in psychiatric facilities are less likely to ever have used tobacco products, which may influence the delivery of cessation services challenging in Veterans Affairs (VA) psychiatric facilities. To prepare for improving the delivery of cessation services in a primarily psychiatric VA hospital, staff were surveyed (N=150) and interviewed (N=8) about their demographic, smoking histories, and attitudes about the delivery of cessation services. About one-third were nurses (registered nurses and licensed practical nurses), another third were nursing assistants, and the rest were advanced health care professionals (physician, physician assistants, social workers) and non-clinical other (housekeepers, police, etc). Almost one-third reported they currently use tobacco products. Almost three-quarters of staff said that they felt that the VA should be doing more to assist patients to quit using tobacco. About one-quarter said that they primarily provide cessation services. Over half felt moderately, very, or extremely confident in providing cessation services. Multivariate analyses showed that higher education (p<0.05), being a surprised staff member (p<0.05), and being extremely confident in providing cessation services had a high risk of returning to daily smoking. Moreover, ever smokers were less confident than never smokers in their ability to provide cessation services (p<0.05). Staff suggestions included educating patients, providing medication in the Canteen store, making the VA a non-smoking facility, do not provide smoking shelters, and provide staff support for staff members trying to quit. Delivery of cessation services in VA psychiatric hospitals needs to be improved by increasing SSM use, training of staff, and improving communication of staff caregivers about the importance of providing cessation services.  
This study was conducted while the first author was a student at the University of Michigan School of Nursing and employed at the Battle Creek VA Medical Center. This study was supported by the Department of Veterans Affairs (SDP 06-003 and Rapid Response Proposal 07-307).  
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This presentation reports on an initiative in Northwestern Ontario to centralize and standardize the identification and documentation of tobacco use in hospitals’ electronic admitting databases as per the USDHHS Tobacco Use and Dependence systems-level guideline 1. Prior to this study, half of the hospitals in NW Ontario recorded tobacco use, but only on paper. What was asked and where it was recorded in patient charts was dependent on thousands of individual providers across many hospitals. Determining tobacco use prevalence with a paper system is difficult, requiring costly manual chart reviews, which is not a sustainable method to systematically track tobacco use over time.

Methods: A tobacco use database was added to the computerized admission forms in 11 of 12 hospitals in NW Ontario. Wording and data field placement were standardized across hospitals, and identification and documentation of tobacco use was centralized by having the admitting staff ask the question.

Results: From June 2007 to June 2008, tobacco use was recorded for 86% of patients (169,258/196,000). Overall tobacco use prevalence was 33%, and ranged from 21% to 44% across hospitals. Prevalence rates for ER ranged from 22% to 46% across hospitals, and from 13% to 33% for inpatients. Tobacco users were significantly younger than non-users (39 yr ± 51 yr, pc0.01), a factor that affected differences in tobacco use prevalence rates across hospitals and between ER and inpatient admissions. Tobacco users also had significantly more readmissions than non-users (M=7 vs. M=4, pc0.01), and were significantly more likely than females to be tobacco users (35% vs. 32%, pc0.01).

Discussion: Tobacco use prevalence was higher than the estimated general population rates of 26% for this region. The calculation of actual versus estimated tobacco use prevalence was made possible through the electronic system. Data collected through this system can also be used to determine case loads for tobacco interventions, as well as used to track change in prevalence over time. This study was funded by the Northern Cancer Research Foundation.

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POS1-36 SYSTEMATIC TRACKING OF TOBACCO USE PREVALENCE IN ACUTE CARE HOSPITALS IN NORTHERN, RURAL ONTARIO, CANADA

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POS1-37 DIFFERENCES IN PAST MONTH SMOKING BETWEEN INDIVIDUAL AND TEAM SPORT PARTICIPANTS AMONG 10TH GRADERS: UNITED STATES, 2006.

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Aim: The aim of this study is to understand how individual and team sport participation relates to past month smoking.

Methods: The Monitoring the Future (MTF) survey assessed a national probability sample of 8th and 10th graders from public and private schools in the United States (n=16,683). The 10th graders in this study consisted of 5,692 students. They were classified in four mutually exclusive groups: No sport participants (NS), team sports participants only (TS), individual sports participants only (IS), and individual and team sports participants (BS). We estimated the association that links type of sport participation with smoking during the past 30 days. The key response variable is past month smoking. Multiple logistic regression was used to obtain weighted odds ratio (OR) estimates for the association between past month smoking and type of sport participation. Smoking peer pressure, and school grades were included in the model to obtain adjusted estimates.

Results: Past month smoking was for NS (19%), TS (12%), IS (17%), and BS (12%). We observed an association between past month smoking and participation in TS and BS, but not for IS. Compared to NS, crude OR estimates were for TS (0.38, 0.58; p0.001), BS (0.39, 0.60; p0.001), and IS (0.89; 95% CI: 0.69, 1.14; p=0.357). These estimates were somewhat smaller after adjusting for the covariates mentioned above, adjusted OR estimates were for TS (0.43; 95% CI: 0.33, 0.55; p0.001), BS (0.44; 95% CI: 0.34, 0.57; p=0.001), and for IS (0.95; 95% CI: 1.0, 1.0; p=1.0). A statistically robust positive association with past month smoking was found for level of peer pressure, inverse relationships included mother’s education and school grades. Males and ethnic minorities were less likely to report smoking (p<0.05).

Discussion: Individual sport participation does not seem to reduce the chances of smoking during the past month. Caution needs to be exercised before assuming that any competitive sport involvement during early adolescence might lead to smoking prevention. Further studies are needed to confirm our findings.

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POS1-38 INTRA-ETHNIC DIFFERENCES IN EARLY-ONSET SMOKING AMONG LATINOS IN THE UNITED STATES

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Aim: To evaluate suspected intra-ethnic differences in early-onset smoking among Latinos living in the United States (US).

Methods: A secondary data analysis of The National Latino and Asian American Study (NLAAAS) was performed. The 2002-2003 NLAAAS is a probability sample of community-dwelling Latinos and Asian Americans in the US aged 18+ (n=4,449). The total Latino sample consisted of 2,554 participants. Latinos were classified in four mutually exclusive subgroups: Mexican Americans (MA), Cuban (C), Puerto Ricans (PR), and Other Latinos (OL). We then estimated the association between specific Latino subgroups and early-onset smoking (i.e. started smoking at 16 years of age or earlier). Multiple logistic regression provided odds ratios (OR) estimates for the association between early-onset smoking and specific Latino subgroups. The adjusted model included age, sex, educational level, and birthplace (i.e., US born or not).

Results: Among Latino ever smokers 67% were early-onset smokers. The corresponding estimates for the Latino subgroups were: M (66%), C (66%), PR (70%), and OL (64%). The unadjusted logistic regression model showed no association between specific Latino subgroups and early-onset smoking. However, in the model adjusting for the covariates previously mentioned, with M as the reference group, we found moderately robust weighted OR estimates for C (OR=1.7; 95% CI: 1.1, 2.6; p=0.019) and PR (OR=1.5; 95% CI: 1.0, 2.2; p=0.038), but not for OL (OR=1.2; 95% CI: 0.8, 1.8; N.S.). US born, low educational level, and male gender were statistically associated with early-onset tobacco smoking (p<0.05).

Discussion: Initial results indicated no significant differences across Latino subgroups and early smoking onset. However, when other covariates were introduced in the analysis, we found statistically robust differences in early-onset smoking across Latino subgroups. This finding provides further evidence regarding the suspected heterogeneity among different Latino populations and their tobacco smoking behavior. Prevention interventions need to account for this heterogeneity. Further studies are needed in order to replicate and explain these differences.

This work was supported, in part by an NIH/NIDA/Fogarty D43 research training program award to Manuel M. Catacora.

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POS1-39 TRENDS IN SECONDHAND TOBACCO SMOKE EXPOSURE AND PEDIATRIC ILLNESS IN THE U.S.

Zubair Kabir, Kathleen Bennett, Gregory N. Connolly, Kenneth Mandl, David Zucker, and Hillie R. Alpert

Background: More than 15,000,000 children in the U.S. are exposed daily to secondhand tobacco smoke (SHS) at home, while millions are exposed in day care centers, restaurants, and workplaces. Exposure to secondhand tobacco smoke (SHS) is associated with a range of developmental and respiratory effects in neonates, infants, children, and adolescents, including sudden infant death syndrome, acute respiratory infections, ear problems, and more severe asthma. SHS exposure among children decreased substantially from 1980 to 1996. However, state-by-state variation in the percentage of population coverage by comprehensive smoke-free workplace laws, day care centers, restaurants, and workplaces has emerged.

Objectives: This study examines the hypothesis that reductions in SHS exposure of children is associated with fewer smoke-related pediatric illnesses and reduced health services utilization by examining relationships between SHS exposure in children and SHS-related pediatric diagnoses and symptoms and associated health services utilization in all health care settings (ambulatory, emergency department, and in-hospital). A cross-sectional observational study with measures of pediatric illnesses and health care utilization determined from the National Ambulatory Medical Care Survey; National Hospital Ambulatory Medical Care Survey–Emergency; and Healthcare Cost and Utilization Project Kids’ Inpatient Database; and exposure variables (percentage of children exposed to SHS in the home, percentage of population coverage by comprehensive smoke-free workplace laws, percentage of smoke-free day care centers, percentage of smoke-free restaurants and workplaces) was conducted using the Behavioral Risk Factor Surveillance System and Current Population Survey–Tobacco Use Supplements. Statistical analysis is by analysis of variance and multi-variable regression modeling.

Results: The national prevalence of households with smoke-free home rules increased from 43.2% in 1992-1993, when less than one percent of the U.S. population was protected by 100% smoke-free indoor air laws, to 72.2% in 2003. Multi-variable regression analyses revealed that multi-variable regression analysis, validation, and results of preliminary analysis are to be presented.

Conclusions: National health care and utilization data will help quantify the potential public health benefits and health care cost savings of reducing SHS exposure among children.

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POS1-40  
MEDICAL COMORBIDITIES INCREASE MOTIVATION TO QUIT SMOKING  

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Veterans are particularly at risk for psychiatric disorders and comorbid conditions. Smoking results in high levels of medical comorbidities among this population. Medical comorbidities have been shown to increase motivation to quit smoking in the general population. The specific aim of this study is to determine if medical comorbidities predict motivation for tobacco cessation among veterans treated in a primarily psychiatric Veterans Affairs (VA) facility. This cross-sectional, substudy of the WATISupportGroupisexpertmoderated,itismaynotberepresentativeofotherunmoderatedweb-basedprograms.Furtherresearchisrequiredintheeffective-

POS1-42  
CORRELATES OF OWNERSHIP OF TOBACCO PROMOTIONAL ITEMS AMONG COLLEGE STUDENTS  
Elin R. Sutfin, Ph.D.*, Jill Newman Blocker, M.S., and Mark Wolfson, Ph.D., Wake Forest University School of Medicine

The tobacco industry is well aware of the progression from experimental to established smoker among college students. Big tobacco spends billions targeting those aged 18-24, which is the youngest group to whom tobacco companies are traditionally marketed. A randomized group trial of an intervention to prevent high-risk drinking on college campuses. 12% reported owning an item with a tobacco logo and 26% reported smoking in the past 30 days. Multivariate analyses revealed a strong positive relationship between ownership of promotional items and smoking (AOR=1.7, CI=2.54-3.94 P<0.001). Those who initiated smoking before the age of 18 were more likely to report owning tobacco promotional items (AOR=1.19, CI=1.33-2.41, P<0.001). Ownership of tobacco promotional items was also more common among males (AOR=1.26, CI=1.03-1.56, P=0.025), those attending public colleges (AOR=1.64, CI=1.08-2.49, P=0.020) and those who reported owning an alcohol promotional item (AOR=4.82, CI=3.66-6.34, P<0.001). Future research should further examine the relationship between ownership of promotional items and tobacco use among college students.

POS1-41  
COMMUNITY-BASED SUPPORT AND SOCIAL NETWORKING ON THE WEB: CONTENT ANALYSIS OF "FIRST POSTS" FROM 2,582 REGISTERED SMOKERS  
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Background: Social support and group therapy are associated with successful smoking cessation. However, due to lack of time or limited access, many smokers are not able to attend in-person support groups. Mainly due to reach and availability, online Support Groups embedded within Web-Assisted Tobacco Interventions (WATI) can potentially reach a vast number of smokers. WATI Support Groups, moderated by trained experts, assist quitters who cannot access traditional cessation environments. This study was aimed at identifying the nature of online social support for smokers. This study aims to gain further understanding in this growing field.

Method: Demographics, usage data and content were collected from StopSmokingCenter.net, a free-to-consumer WATI that does not host advertising, sell or promote any products or services. Qualitative analyses of posts were conducted to explore frequency of use, message themes and content.

Results: 16,764 smokers registered between November 6, 2004 and May 15, 2007 (mean age was 38.9; 65.4% female). The mean number of cigarettes smoked per day was 20.6 and the mean score for users who completed the Fagerstrom test was 5.6. A total of 15.3% (n=2,562) registered members made at least one post in the support group with 25% of first posts receiving replies within 12 minutes. The most frequent first posts were from recent quitters struggling and seeking support or advice (28%), were responding to another quitter’s questions about comments or cravings (17.6%), questions or comments about withdrawal symptoms (16.1%) or cravings or triggers (15.3%). Most responses were from members who had quit for a month or longer.

Conclusions: Peer-to-peer responses in the WATI Support Group were rapid, indicating that online support may be a particular benefit to recent quitters. Interactions appear consistent with in-person support groups. However, as this WATI Support Group is not moderated, it may not be representative of currently available unmoderated web-based programs. Further research is required in the effectiveness of online support groups and their possible limitations.

POS1-43  
DO PARENTS SABOTAGE THEIR TEENS’ EFFORTS TO QUIT SMOKING? A PROSPECTIVE STUDY OF THE EFFECTS OF PARENTAL ATTITUDES AND BEHAVIORS ON ADOLESCENT QUITTING  

Previous research has shown that the odds of successful smoking cessation among adolescents are extremely low. However, little research has explored the factors that might contribute to this lack of success. We hypothesized that teens whose parents had accepting attitudes toward their tobacco use and who smoked themselves would be less likely to achieve smoking cessation. Unlike other studies, we adopted a prospective design, using data from the long-running Memphis Health Project. This prospective study began with a survey of 7,000 teens in the Memphis City Schools. Youth were asked both about their personal tobacco use and about their parents’ smoking habits and attitudes toward their teen’s tobacco consumption. These questions were repeated in subsequent annual surveys, and a portion of the data from the current year’s survey was included as well, for a total of 13,986 respondents, approximately 65% of the participants remained over the life of the study. We began by identifying all teens that had a history of smoking by the 12th grade and divided them into those who had already quit smoking and those who had not. Of these teens, those whose families were smoking during their 9th grade year were more likely to continue to smoke three years later than youth from nonsmoking families, OR = 1.45, p < .04. To determine whether baseline parental attitude toward teen smoking also predicted the likelihood of teen quitting, we conducted an analysis of variance. As expected, we found that parents who were more accepting of teen tobacco use when their offspring were in the 9th grade were more likely to have teens who still smoked in 12th grade, F(1, 336) = 11.02, p < .001. Our analyses provide evidence of a moderating effect of one of the two parental variables. However, of the two, the influence of parental attitude on subsequent teen smoking was stronger. These data suggest that parental atti-
Aims: The aim of this study is to determine the prevalence, demographic character-
istics and suspected risk behaviors associated with tobacco smoking during 
pregnancy among women in the United States (US).

Methods: A total of 1,397 pregnant women were analyzed from the National 
Epidemiologic Survey on Alcohol and Related Conditions from 2001-2002. Of 
these, 314 women (23%) were tobacco smokers and pregant during the past 12 
months. Suspected variables evaluated in the analysis were age, race, education, 
marital status, income, current job status, place of birth (e.g., US born or not), age 
at first marriage, number of children, age of first and last born, and number of 
years living in the US. Multiple logistic regression analyses provided adjusted esti-
mates for all variables included in the model.

Results: The study sample had a mean age of 28 years and consisted of 43% 
whites, 50% had some college education and 61% were married at the time of 
assessment. Adjusted odds ratio (OR) estimates for factors related to prenatal 
smoking in the final model were age of first born (OR = 0.91, 95% CI: 0.87, 0.95; 
p<0.001), high school degree (OR=1.5, 95% CI: 1.1, 2.2; p=0.021), not living with 
someone (OR=3.2, 95% CI:2.2, 4.7; p<0.001), born in the US (OR=0.3, 95% CI; 
1.8, 5.8; p<0.001), and African Americans (OR=60, 95% CI: 0.12, 3.1; p<0.001) 
and Latinas (OR=0.24, 95% CI: 0.15, 0.38; p<0.001) were both less likely to 
smoke during pregnancy than their whites counterparts. No relationship was found 
for age, income, current job status, age at first marriage, number of children, age 
of last born, and number of years living in the US.

Conclusions: This study highlights the importance of developing culturally 
sensitive sex education programs targeting younger audiences and reinforcing the 
health benefits of delaying the age of first intercourse. Our findings suggest that 
attending college is an important factor in suppressing behavioral risky behaviors 
before and during pregnancy. In contrast, findings for African Americans were in disagreement with the current literature on this topic, suggesting the need to replicate our results.

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**POS1-48**

THE ASSOCIATION OF ALCOHOL CONSUMPTION WITH TOBACCO USE IN BLACK AND WHITE COLLEGE STUDENTS FROM THE UNITED STATES

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The objective of this investigation was to explore the association of alcohol consumption with tobacco use in Black and White college students from the United States. The study recruited students aged 18-24 years. A survey was administered in classrooms to assess sociodemographic variables, 30-day tobacco use, and 30-day alcohol use. Our findings revealed that students who consume a greater amount of alcohol are more likely to smoke cigarettes or cigars. We also discovered that among students who report binge drinking or drinking until drunk, there exists a subset that use smokeless tobacco (11%) or smoke a pipe (4%). In regard to differences in racial characteristics, we found that White students who consume alcohol are more likely to also have smoked cigarettes than Black students. However, no racial differences in use of other forms of tobacco were found between Black and White students who consume alcohol. When we classified students according to the primary type of alcoholic beverage consumed we found that Black males who consume beer were significantly more likely to use tobacco than those who drank other beverages. No pattern in how specific type of alcohol consumed related to tobacco use was found for White students. However, we found that regardless of race, students who reported drinking until drunk on a greater number of occasions were significantly more likely to be tobacco users. Our findings extend prior investigations that have found alcohol use associated with cigarette smoking, and suggests that additional attention should be paid to how alcohol is related to other forms of tobacco.

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**POS1-50**

USE OF MENTHOL CIGARETTES AND NICOTINE DEPENDENCE: FINDINGS FROM THE INTERNATIONAL TOBACCO CONTROL POLICY EVALUATION SURVEY

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Background: Relatively few population-based epidemiologic studies have been done to examine the association between menthol cigarettes and nicotine dependence. The results are also inconclusive. The objectives of this study are to examine the patterns of menthol cigarette use in the United States, United Kingdom, Canada, and Australia and to assess the effects of menthol cigarettes on indicators of nicotine dependence.

Methods: The total sample size for this study is 4,603 participants in the International Tobacco Control (ITC) Policy Evaluation Survey who were smokers at the time of the baseline interview and who reported their usual cigarette brand in each survey or not smoking in two follow-up surveys. Outcomes assessed were: 1) smoking cessation defined as smoking at least weekly at the baseline survey but less than weekly at follow-up; and 2) changes in self-reported cigarettes per day.

Results: 8.4% of all respondents (but 25% of US respondents) reported that they smoked menthol cigarettes at the time of the baseline survey. Overall, the use rate of currently smokers was relatively stable across all three waves of the survey. Baseline characteristics of menthol smokers differed depending on the participants’ country of residence. The United States was the only country where a relationship between a preference for menthol cigarettes and minority status was observed after being adjusted for other covariates. Non-menthol smokers who preferred non-menthol cigarettes to self-reported menthol cigarette smokers had similar quit rates (15.6% and 14.6%, respectively; RR=0.95, 95% CI 0.67-1.33) and change in the number of cigarettes smoked per day during the time between the base and wave three surveys.

Conclusions: The results observed in this study suggest that there is no association between menthol cigarette use and indicators of nicotine dependence. From a policy perspective, the findings do not suggest that menthol is harmful. Public health agencies have documented how it has been used as a marketing tool to promote tobacco use, particularly among underserved segments of the population. Efforts should be made to eliminate the use of this agent.

**POS1-49**

SMOKING EFFECT ON BIRTH WEIGHT IN A POPULATION OF AFRICAN-AMERICAN RESIDENTS OF THE DISTRICT OF COLUMBIA

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The limited success of behavioral interventions targeting cessation in pregnancy may be due to failure to address co-occurring psycho-behavioral risks. A randomized clinical trial to improve Healthy Outcomes through Pregnancy Education (HOPE) recruited African-American women reporting one of the following: smoking, environmental tobacco smoke exposure, depression or intimate partner violence. Eligible women and their partners were enrolled. This analysis includes the 714 women with singleton live births, of whom 124 (17.6%) admitted to smoking at baseline (BL). Women admitting to smoking later in pregnancy had significantly lower BW compared to those who did not: 188±164 vs. 208±111 g (p=0.06). The mean BW for BL smokers was significantly lower, 3019±565 g vs. 3185±575 g (p=0.003). Women admitting to smoking later in pregnancy had significantly higher SCL compared to those who did not: 321±1800 vs. 321±1800 (p=0.002). Two logistic models examined BW variations based on maternal characteristics at BL and later in pregnancy. Significant BW variation in the first model was attributed to hypertension (-191 g, p=0.02), gestational diabetes (+248 g, p=0.01) and BL smoking (20 g, p=0.02). For the second model, significant BW variation BW was attributed to gestational diabetes (+288 g, p<0.001) and later SCL above 20 ng/ml (p=0.04). For the second model, significant BW variation in the second model was attributed to hypertension (-191 g, p=0.02), gestational diabetes (+248 g, p=0.01) and BL smoking (20 g, p=0.02). For the second model, significant BW variation BW was attributed to gestational diabetes (+248 g, p=0.01) and later SCL above 20 ng/ml (p=0.04). In this population, the association between lower BW at low levels of exposure is similar to variation associated with gestational diabetes and hypertension.

Eunice Kennedy Shriver National Institute of Child Health and Human Development.

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**POS1-51**

CHANGE IN RESPIRATORY SYMPTOMS AFTER SMOKING CESSATION

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Background: Smokers may be motivated to quit by the perspective of delayed health benefits, such as a decreased risk of cancer, but also by the perspective of immediate benefits, such as improvement in respiratory symptoms. Aim: To describe associations between smoking status and self-reported respiratory symptoms, in current and former smokers, in cross-sectional and in longitudinal data. Methods: Internet survey in 2005-2008, on a smoking cessation website, with a follow-up survey after 30 days. Results. There were 8,625 participants at baseline and 1,156 (13%) at follow-up. In the 124 baseline smokers who quit smoking at 30-day follow-up, there was a decrease in the proportion of participants who declared that they often coughed even without a cold (from 50.0% at baseline to 16.1% at follow-up), who had phlegm when they coughed in the morning (from 48.4% to 19.4%), who were out of breath when they climbed stairs or after a quick walk (from 70.1% to 50.8%) and who wheezed (from 29.8% to 8.9%), p<0.001 for all before-after comparisons. In cross-sectional data, in baseline former smokers, none of the above symptoms was significantly different. 9.8% of those who quit 30-days before baseline, 7.4% (8-30 days), 32.3% (31-90 days) and 32.6% of those who had quit 91-365 days previously (p<0.001).

Conclusions: Smoking cessation is followed by a rapid and substantial improvement in self-reported respiratory symptoms, short breath and wheezing. This information can be used to motivate smokers to quit.

No funding.

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As smoking is becoming more heavily concentrated in groups with low socioeconomic status (SES), social disadvantage is an important characteristic that may influence nicotine dependence and success in smoking cessation. Part of the explanation for the growing segment of smoking among the poor may be that these smokers tend to have higher levels of nicotine intake per cigarette. This may be a way they economize the higher cost of cigarettes. Originally intended as a study of nicotine intake in schizophrenia we recruited low SES controls as a comparison group. We examined several indicators of SES, including those described by Jarvis et al. (1983). Measures examined were rented vs. owned housing, owning a car, individual income, employment status, educational level and assistance (supplemental security income, food stamps and/or welfare). This is a preliminary analysis of the first one hundred twenty six subjects, who participated in the study. All subjects underwent topography measures and had blood draws for nicotine and cotinine. Serum cotinine levels were significantly higher among those inclining in rented vs. owned housing (389 vs. 309; p=0.037). Subjects receiving assistance had significantly higher serum cotinine levels vs. no assistance (406 vs. 324; p=0.011). Other indicators of social deprivation such as no car, unemployment and income below poverty also showed trend toward higher cotinine levels. To control for possible confounders (like schizophrenia) regression analysis were done with group and other demographic and baseline smoking characteristics. We found recent assistance, unemployment, income below poverty, and rented housing to be significant predictors of higher serum cotinine level in addition to diagnosis of schizophrenia and baseline CO (in ppm). Indicators of social deprivation may influence nicotine intake beyond factors, which have already been identified such as psychiatric illness. Measures of social deprivation in US samples further warrant further investigation.

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**POSI-52**

THE ROLE OF SOCIAL DEPRIVATION FACTORS ON NICOTINE INTAKE

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As smoking is becoming more heavily concentrated in groups with low socioeconomic status (SES), social disadvantage is an important characteristic that may influence nicotine dependence and success in smoking cessation. Part of the explanation for the growing segment of smoking among the poor may be that these smokers tend to have higher levels of nicotine intake per cigarette. This may be a way they economize the higher cost of cigarettes. Originally intended as a study of nicotine intake in schizophrenia we recruited low SES controls as a comparison group. We examined several indicators of SES, including those described by Jarvis et al. (1983). Measures examined were rented vs. owned housing, owning a car, individual income, employment status, educational level and assistance (supplemental security income, food stamps and/or welfare). This is a preliminary analysis of the first one hundred twenty six subjects, who participated in the study. All subjects underwent topography measures and had blood draws for nicotine and cotinine. Serum cotinine levels were significantly higher among those inclining in rented vs. owned housing (389 vs. 309; p=0.037). Subjects receiving assistance had significantly higher serum cotinine levels vs. no assistance (406 vs. 324; p=0.011). Other indicators of social deprivation such as no car, unemployment and income below poverty also showed trend toward higher cotinine levels. To control for possible confounders (like schizophrenia) regression analysis were done with group and other demographic and baseline smoking characteristics. We found recent assistance, unemployment, income below poverty, and rented housing to be significant predictors of higher serum cotinine level in addition to diagnosis of schizophrenia and baseline CO (in ppm). Indicators of social deprivation may influence nicotine intake beyond factors, which have already been identified such as psychiatric illness. Measures of social deprivation in US samples further warrant further investigation.

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**POSI-53**

ADOLESCENT TOBACCO PREVALENCE: A COMPARISON OF TWO GLOBAL YOUTH SURVEYS

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Tobacco use is a major global health concern. By the year 2025, cigarette smoking will be responsible for about 10 million deaths per year. The systematic collection of smoking prevalence data is a crucial need, particularly with respect to youth populations in low and middle income countries, to monitor the tobacco pandemic and prevent the future burden of tobacco related disease. As such, the World Health Organization (WHO) conducted two school-based surveys, 1999-2000, to characterize and monitor adolescent tobacco use worldwide. These surveys are the Global School-based Student Health Survey (GSHS), a multi-risk factor survey, which contains a segment of questions on tobacco behavior, and the Global Youth Tobacco Survey (GYTS), a specific, questionnaire. The overall purpose of this present study was to examine differences in smoking prevalence reported by two surveys administered under similar time periods in nine low and middle income countries: Guyana, Libya, Namibia, Philippines, Saint Lucia, Saint Vincent Grenadines, Seychelles, Trinidad/Tobago, and Uruguay. Participants (n = 31,122) included young adolescents ages 13-15 years old. Results indicate that overall, comparative smoking prevalence rates for each country as reported by both surveillance systems were similar, with the exception of the Philippines and Saint Lucia. Gender specific smoking prevalence rates were also similar, with the exception of girls in the Philippines and Seychelles, and boys in the Philippines. The advantages of utilizing a multi-risk factor survey (GSHS) in low and middle-income countries that describe tobacco use and additional youth risk behaviors, are discussed.

This study was conducted while the corresponding author was at the World Health Organization, Geneva, Switzerland. Supported by the NIH funded Minority Health and Health Disparities International Research and Training (MHIRT) program at Pennsylvania State University.

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**POSI-54**

THE BURDEN OF MENTHOL CIGARETTES: THE TOBACCO INTAKE AND DEPENDENCE

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Background: Black and female smoker sub-groups are the highest consumers of mentholated cigarettes internationally. While these subgroups report smoking fewer cigarettes per day (CPD), they tend to experience greater tobacco-related health consequences. This increased burden may be explained by higher nicotine dependence, which in turn may contribute to greater tobacco toxin exposure.

Objective: The present study examined estimated daily consumption of nicotine, tar, and carbon monoxide (CO) intake (FTC yields multiplied by CPD) and tobacco dependence among black and white menthol and non-menthol female smokers. Methods: 669 (70% white, 20% black; mean age of 41 years) potential smoking cessation research trial participants provided phone interview data regarding their CPD, time to first cigarette (TTF), length of the longest quit attempt, and the name and style of their preferred cigarette brand.

Results: Analysis of variance revealed significant main effects of cigarette mentholation on measures of estimated daily tar (213.0 ± 123.5 non-menthol vs. 250.7 ± 131.8 menthol); daily nicotine (17.0 ± 10.2 non-menthol vs. 22.1 ± 23.8 menthol), and daily CO (219.1 ± 115.7 non-menthol vs. 243.4 ± 22.6 menthol). Similarly, significantly higher proportions of menthol vs. non-menthol smokers reported low TTF (50.2% vs. 43.7%; p<0.01) and longest quit length of less than 90 days (56.6 vs. 47.2). Black menthol smokers reported significantly fewer CPD (14.7 ± 8.7) than white menthol 18.7 ± 7.4 or non-menthol smokers (19.2 ± 6.1) (ps <.01). University of Memphis: Among menthol smokers, lower CPD masked higher estimated tobacco toxin intake and tobacco dependence. Because cessation is compromised by higher dependence, menthol smokers may be exposed to a greater disease burden than non-menthol smokers not only by current, but also lifetime toxin intake.

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**POS1-57**

**INTRA-ETHNIC DIFFERENCES IN PAST YEAR SMOKING AMONG LATINOS IN THE UNITED STATES**

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Aim: The aim of this study is to advance our understanding on intra-ethnic differences as they relate to past year smoking among Latinos living in the United States (US).

Methods: The National Latino and American Study surveyed a probability sample of community-dwelling Latinos and Asian Americans in the US aged 18+ (n=4,449). Latinos were classified in four mutually exclusive categories: Cubans (C), Mexicans (M), Other Latinos (OL), and Puerto Ricans (PR). We then estimated the association that links specific Latino subgroups with smoking during the past year. The Latino sample consisted of 2,564 respondents. Past year Latino smokers comprised 61% of that sample. The key response variable in this study is past year smoking. Multiple logistic regression was used to obtain odds ratio (OR) estimates for the association between past year smoking and different Latino subgroups. Age, sex, educational smoking age of onset, birthplace (i.e., US born or not), and language of interview (i.e., English or Spanish) were included in the model to obtain adjusted estimates.

Results: Past year smoking among Latinos was for C (62%), M (61%), OL (87%), and PR (86%), benefit if they continued to stay quit but 67% were worried about future relapse. We did not observe any association between past year smoking and specific Latino subgroups. Compared to M, crude OR estimates were for C (1.0; 95% CI: 0.7, 1.4), M (1.3; 95% CI: 0.9, 1.8), OL (1.1; 95% CI: 0.8, 1.6) and PR (1.1; 95% CI: 0.8, 1.5). However, health expectations were not associated with PR. OR estimates were found for C (2.3; 95% CI: 1.5, 3.5) and OL (1.6; 95% CI: 1.1, 2.4), but not for PR (1.4; 95% CI: 1.0, 2.0) when compared to M after adjusting for the covariates mentioned above. Among these covariates, a statistically significant association with past year smoking was found for US born and age (i.e., inverse relationship).

Discussion: Based on this initial evidence from a nationally representative sample of US Latinos, we found statistically different patterns of smoking among these Latino subgroups after adjusting for several covariates. Caution needs to be exercised before assuming any degree of homogeneity among Latinos and their past year smoking behavior.

No funding.

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**POS1-58**

**IMPACT OF ADULT SMOKERS’ POST-QUITTING EXPERIENCES OF GAINS IN HEALTH, COPING AND QUALITY OF LIFE ON RELAPSE**

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Quitting smoking is difficult and among those who do quit, many relapse. A good understanding of factors that predict relapse may provide insight for developing effective intervention to reduce relapse among those who quit smoking. This study aimed to explore the impact of quitting and associated experiences on gains in health, coping, and quality of life on relapse among adult smokers who had quit smoking. Data for this study come from the third, fourth and fifth waves of the ITC Four Country Survey, a random digit-dialed telephone survey of 8,000+ adult smokers (ages 18+) followed up from four countries: Canada, US, UK and Australia. Quitters at each wave were asked about any improvement in overall quality of life, capacity to enjoy life, ability to cope with stress and control negative emotions since they quit. We then included their expectations about health gains from staying quit and concerns about future illness despite quitting. The results indicated that at wave 3 (and replicated at wave 4), 70% of quitters reported an improvement in overall quality of life since quit, 52% reported an improvement in capacity to enjoy life’s pleasures, 21% and 16%, respectively, reported an improvement in ability to cope with stress, and to control negative emotions since they quit. About 96% of the quitters expected at least a slight health benefit if they continued to stay quit but 67% were worried about future relapse despite having quit. Logistic regression analyses indicated that relapse at the next wave was associated with lower coping scores (Wave 3 OR=0.95, 95% CI:0.84, 1.06; Wave 4 OR=0.94, 95% CI:0.84, 1.06) and that higher coping scores increased the odds of relapse. These results show that most smokers who had quit reported gains in health enjoyment, coping and overall quality of life. Gains in coping with stress and negative emotions appear the most critical for preventing relapse. Thus, this should be a key target of relapse prevention strategies.

The ITC Four Country Survey was funded by grants from the National Cancer Institute of the United States (through R01 CA 100362 and through the Roswell Park Cancer Institute Tobacco Research Fund), P50 CA111236, Robert Wood Johnson Foundation (045734), Canadian Institutes of Health Research (57897), National Health and Medical Research Council of Australia (265903), Cancer Research UK (C13213/A3726), Canadian Tobacco Control Research Initiative (014578), with additional support from the Centre for Behavioural Research and Program Evaluation, National Cancer Institute of Canada/Canadian Cancer Society.

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**POS1-59**

**CHARACTERISTICS OF “HARDCORE” SMOKERS IN A STATEWIDE SURVEY OF ADULTS**

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Smoking rates in Maryland are declining; remaining smokers tend to be less willing and/or able to quit smoking. Data from the 2006 Maryland Adult Tobacco Survey (MTAS) were used to classify adults into the TTMs Stages of Change (SOC), those in Precontemplation (PC: i.e., current smokers not seriously planning to quit in the next 6 months) were further sub-divided into “hardcore” smokers vs. non-hardcore smokers based upon criteria outlined by Auguston & Marcus (2004). “Hardcore” smokers were defined as: 1) 26 years old, 2) daily smokers, 3) 5+ year smoking history, 4) 15+ cigarettes per day, 5) no reported intention to quit, and 6) having never made a quit attempt. This study examined the characteristics of “hardcore” smokers relative to non-hardcore smokers in Precontemplation SOC as well as other stages using a statewide population-level survey of adults in Maryland. Of the Maryland smokers, 55.4% were in PC and 4.2% of those could be classified as “hardcore” smokers. If “hardcore” is defined including previous quit attempts (criteria #6), almost all (96%) of these smokers were “hardcore”. “Hardcore” smokers were more likely to be male; non-Hispanic and white; ever married; and less educated. “Hardcore” smokers began smoking at an earlier age, reported more friends who use tobacco, and reported significantly less “readiness” to quit smoking relative to PC smokers (p<0.001) compared to other smokers. However, “hardcore” smokers were more aware of services available for smokers (i.e., Quitline) and the least likely to be asked if they smoke and/or advised to quit by their doctors. In general, “hardcore” smokers reported greater riskier attitudes and greater opposition to smoke-free policies relative to other smokers. These relations were found between both “hardcore” classifications (with and without prior quit attempts) and when comparing “hardcore” precontemplators to smokers in PC as well as those in Contemplation & Preparation. “Hardcore” smokers represent the most problematic even compared to other smokers in PC and need targeted cessation efforts and evaluation of outcomes.

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**POS1-60**

**TESTING THE CIGARETTE DEPENDENCE SCALE IN 4 SETTINGS: PSYCHIATRIC CLINICS, SMOKING CESSATION CLINICS, A SMOKING CESSATION WEBSITE AND IN THE GENERAL POPULATION**

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Aim: To assess the properties of the Cigarette Dependence Scale (CDS-12) in various samples of smokers and to provide reference scores in clinical samples. The CDS-12 is an instrument with 12 items designed for use in psychiatric settings. We reported the results of 4 samples of daily cigarette smokers: psychiatric outpatients in Geneva, Switzerland (n=226), patients of smoking cessation clinics in France (n=370), visitors of a French-language smoking cessation website (n=13,697) and a representative sample of the general population of Geneva (n=743).

Results: In all 4 samples, factor analyses indicated that CDS-12 was unidimensional. Cronbach’s alpha coefficients were >0.87 in all samples. CDS-12 was slightly skewed towards higher values, and it was associated with expired carbon monoxide but this association was not strong (9% of variance explained, p<0.001). CDS-12 ratings were highest in clientsof smoking cessation clinics (mean=47.7, SD=10.2), followed by psychiatric patients (mean=44.4, SD=8.4), visitors of smoking cessation websites (mean=43.3, SD=11.6) and the general population sample (mean=36.9, SD=12.3). Except for tolerance, each element in the DSM-IV and ICD-10 definitions of dependence is reflected by at least one item in CDS-12, even though the match with these definitions is sometimes indirect. CDS-12 compared favorably with the Fagerström Test for Nicotine Dependence in tests of validity and reliability.

Conclusions: This work presents reference scores and validity and reliability tests for CDS-12 in a diversity of samples. This information should be useful to clinicians and researchers.

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SRNT • Poster Session 1

POS1-61 FEASIBILITY OF COLLECTING BIOLGIC SAMPLES FROM POPULATION BASED SAMPLES TO EVALUATE PUBLIC HEALTH POLICY

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Background: Large-scale epidemiologic surveys seeking to incorporate biologic data have frequently relied upon clinic-based sample collection. This method can be costly and is limiting in terms of collecting data from more representative samples of a population. Collecting saliva through postal mail offers an alternative option that is less expensive, minimally invasive, and can be incorporated into large population-based studies. This methods study two aims: 1) to assess the feasibility of collecting saliva and spent cigarette butts from cohort participants in the International Tobacco Control (ITC) study and 2) to evaluate the impact of this type of data collection on future response to the ITC telephone survey.

Methods: Participants were asked to provide a saliva sample using a standardized cotton wool swab collection device along with 5 cigarette butts, in individual containers, from cigarettes smoked on a given day. Sample collection kits were mailed to a random sample of 400 daily smokers of manufactured cigarettes who were recruited into the annual ITC-4 country (UK, USA, Canada, and Australia) study in 2006. Additionally, investigators in Mexico and Uruguay collected saliva and cigarette butts in a same-day sample collection method from 175 smokers following completion of the ITC survey.

Results: Biologic samples were collected from 92% of participants in Mexico and Uruguay, and 52% of participants who agreed to provide a sample actually returned a sample. Telephone survey participants who were asked in 2006 to collect a saliva sample were more likely to have participated in the 2007 survey (OR=1.28; 95% CI: 1.01-1.62, p<.01).

Conclusions: These results demonstrate that collecting biomarker samples from population-based samples is feasible and that the added participant burden does not negatively influence response rates to a subsequent telephone survey.

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POS1-62 HYPERTENSION AMONG SMOKERS IN ENGLAND – ITS DETECTION AND ASSOCIATION WITH SMOKING CESATION IN A POPULATION SAMPLE

Lion Shahab*, Jennifer Mindell, and Robert West

Aims: Smoking and hypertension are known to act synergistically to increase risk of cardiovascular disease and clinical guidelines recommend efforts to treat hypertension among smokers. However, little is known about the detection of hypertension in this group and its impact on motivation to stop. The current study aimed to determine the prevalence of diagnosed hypertension in smokers and non-smokers and whether self-reported smoking cessation in those having hypertension is associated with improvements in blood pressure.

Methods: Data, including socio-demographic, anthropometric, lifestyle and smoking characteristics, provision of quit advice and biological markers of cardiovascular risk, were collected from 21,304 adults participating in the Health Survey for England in 2003 and 2006. Diagnosed hypertension was estimated from self-report and medication use and objectively defined by blood pressure readings.

Results: Only two thirds of hypertensives reported a diagnosis with the disease; across years, detection improved in non-smokers (OR 1.33, 95% CI 1.17-1.51) but not smokers (OR 1.08, 95% CI 0.84-1.37). In general, hypertensive smokers were less likely to be diagnosed than non-smokers (OR 0.76, 95% CI 0.60-0.98). However, this association was accounted for by the fact that smokers had a lower body mass index. Smokers reporting a diagnosis were more likely to be advised to stop smoking than undiagnosed hypertensive smokers when controlling for relevant confounders (OR 3.52, 95% CI 2.49-4.98) but they were not more motivated to stop (OR 1.32, 95% CI 0.92-1.89). Despite this, quit rates were significantly higher among hypertensives with than without a diagnosis (OR 1.33, 95% CI 1.03-1.72).

Conclusion: Diagnosis of hypertension remains lower than desirable, especially among smokers. The effect may be explained by weight differences among smokers and non-smokers. Besides being an essential precursor to treatment, receiving a diagnosis with high blood pressure is also important because it appears to trigger smoking cessation, and this finding underlines the on-going need to improve detection and treatment of hypertensive smokers.

The work was supported by the charity Cancer Research UK. These bodies bear no responsibility for the analyses and interpretation reported here.

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POS1-63 CAMEL SNUS IN A WEST VIRGINIA TEST MARKET: KNOWLEDGE, ATTITUDES, BELIEFS, AND UTILIZATION


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In July 2007, RJ Reynolds began test-marketing Camel Snus, a smokeless spitless tobacco product, in Morgantown, West Virginia (USA). West Virginia has high smoking rates and adult use, making it an appropriate test market area. This study assessed knowledge, attitudes, beliefs, and utilization of Camel Snus among a young adult population. There were 662 surveys administered and completed on-site to college students at least 18-years of age attending three campuses in Morgantown. Most respondents were: 18-24 years of age (75.1%); White (91.9%); with equal males (50.3%) and females (49.7%). 190 respondents (28.7%) were aware of Camel Snus and 24.3% knew it was a “smokeless spitless tobacco product”. Among those who knew about Camel Snus (N=161): 80.7% ever used tobacco; 49.1% currently smoked; 42.2% ever tried to quit smoking; 21.1% currently used smokeless tobacco; 26.7% ever tried or used Camel Snus. Some who tried Camel Snus (17.3%) did not currently use smokeless tobacco, including a few never smokers (5.5%). A majority who tried Camel Snus (79.1%) thought it was a good way to get nicotine in places that do not allow smoking. Camel Snus users were more likely to ever use or try Camel Snus if they were: male (p<0.00); current smokers (p<0.003); current cigarette tobacco users (p<0.000); thought snus was a less harmful way to get nicotine than other smokeless tobacco products (p<0.00); ever tried to quit smoking (p<0.001); or also showed a dish good way to get nicotine in places that did not allow smoking (p=0.026). Respondents were less likely to try Camel Snus if they thought it was more addictive than cigarettes (OR 0.57), Camel Snus was not good for their health (OR 0.54), or had a young adult college student; however, nearly one-fourth were aware and knew about the product, and their attitudes and beliefs related to addictiveness, harm, and convenience of nicotine delivery were related to utilization. Newly developed and marketed tobacco products remain important for study, especially among vulnerable age groups and areas with high tobacco use and potential market receptivity.

Funding for this project was received from internal research support at West Virginia University School of Pharmacy and Mary-Babb Randolph Cancer Center.

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POS1-64 LUNG CANCER DEATHS AND PER-CAPITA SMOKELESS TOBACCO USE: CHALLENGE-DECHALLENGE AT THE LEVEL OF THE ENTIRE US POPULATION 1905-2005

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It has been over a century since the hypothesis that the carcinogenic activity in tobacco smoke was due to a combination of toxic combustion products, volatile and tobacco-specific nitrosamines was first proposed. In that time the Federal Trade Commission per-capita average of smoked tobacco usage has fallen from its peak of 12.6 pounds per capita per year, down to a level of about 3.9 pounds per year, a level consistent with the start of the cigarette epidemic in 1905. This challenge-dechallenge at the level of the entire United States population is one of the largest natural experiments in human carcinogenesis ever to occur. It raises the research question, “How well did the rise and fall of smoking tobacco usage (primarily in cigarettes) predict the lung cancer experience of the United States population?” To examine this question the actual age-adjusted (2000) lung cancer experience for the United States was compared against the lung cancer experience predicted from the per-capita FTC smoked tobacco consumption data. The analysis showed that tobacco smoking data is very highly predictive of the United States lung cancer mortality experience (Age Adjusted Death Rate = 6.846 pounds per capita – 22.9, R2 = 0.946) provided that the pounds per capita data was lagged 30 years to allow for exposure and oncogenesis. The data shows that the systematic body work of cigarette-related pulmonary oncogenesis is demonstrable on a population basis. The analysis also reveals a systemic pattern in the residuals. Based on the experience from 1905-1999, there should be a more marked drop in lung cancer death rates than was actually seen for the FTC data. In 2005, rather than the 52/100,000 actually observed. Possible explanations involve recent ascertainment error in cancer cases, changes in toxicity of cigarettes from the 1970s onward, or a market for untaxed, unreported (bootleg) cigarettes that has grown so large as to be beyond the FTC national data base.

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POS1-65 PREDICTORS OF REGULAR SMOKING BEYOND HIGH SCHOOL

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Research suggests the majority of adults smoking regularly initiated in adolescence and continued these behaviors until adulthood. This study aims to identify risk factors for secondhand smoke exposure at home and school. A cross-sectional survey was administered to all high school students in one suburban school district. The main predictor of secondhand smoke exposure was found to be parental smoking. Adolescents who reported secondhand smoke exposure at home and school were more likely to initiate smoking initiation compared to those who did not report exposure.

POS1-66 PSYCHIATRIC DISORDERS, BUT NOT SUBSTANCE ABUSE DISORDERS, PREDICT MOTIVATION FOR TOBACCO CESSION

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Veterans are particularly at risk for psychiatric and substance abuse disorders and tobacco use. The specific aim of this study was to determine if psychiatric and substance abuse disorders predict motivation for tobacco cessation among veterans treated in a primary psychiatric Veterans Affairs (VA) facility. This cross-sectional study was conducted with a convenience sample of general inpatient, outpatient, and residential veteran tobacco users (N=146) from a primarily psychiatric VA facility. Motivation for tobacco cessation was measured by two questions: 1) do you think quitting smoking is important to your health? and 2) are you thinking of quitting smoking in the next 30 days? Means and frequencies were conducted for all variables. Multivariate analyses using logistic regression were conducted to determine if self-reported psychiatric and substance abuse disorders were associated with motivation to quit using tobacco, controlling for age, race, and employment status. The mean age was 50, almost all were male, just over 40% were non-White (mostly Black), and only 17% were employed. The average number of years smoking cigarettes was 28 and most smoked about a pack a day. About 74% reported having a psychiatric problem while 64% reported a smoking abuse problem and 48% reported having both disorders. Multivariate analyses showed that compared to those without psychiatric disorders, those with psychiatric disorders had a three times higher odds of feeling quitting tobacco was important to their health (p<0.05) and a nearly four times higher odds of seriously thinking of quitting in the next 30 days (p<0.05). However, there were no significant differences in motivation to quit tobacco among those with substance abuse disorders compared to those without substance abuse disorders. Veterans with psychiatric comorbidity are particularly motivated to quit using tobacco and should readily be offered cessation services. Veterans with substance abuse disorders may need interventions designed to enhance and support motivation for tobacco prevention.

This study was conducted while the first author was at the Battle Creek VA Medical Center. This study was supported by the Department of Veterans Affairs (SDP De-003 and Rapid Response Proposal 07-037).

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POS1-67 CIGARETTE SMOKING, SUBSTANCE ABUSE AND MORTALITY RISK IN PEOPLE WITH SCHIZOPHRENIA

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Cigarette smoking and substance abuse is higher in people with schizophrenia compared to the general population. Due to biological and environmental differences, it remains unknown as to whether these behaviors contribute to the risk of mortality in this population. We identified 3,190 unique patient records representing people with schizophrenia treated between 1994 and 2000. Social Security death index was used to determine all who died and death date. Stratified by race, gender, age, smoking status and substance abuse, rates were at higher risk of all cause mortality than females (hazard ratio=2.0, p=0.003); substance abusers were at a lower risk of all cause mortality compared to non-users across all age groups (hazard ratio=0.5, p=0.003). There was no significant interaction between smoking and substance use (p=0.26) but there was a significant age x smoking interaction (p=0.012), with estimated hazard ratios of 2.0 for smokers versus non-smokers among 35-55 year olds and 0.6 among those >55 years. Patients who smoked >1 pack/day had the highest mortality rates and the most likely to use substances compared to those who smoked less than one pack daily (p=0.0001). Conclusion: Substance use among people with schizophrenia does not appear to increase all cause mortality risk, while cigarette smoking particularly in younger people ages 35-55 contributes to an increased risk of death. Smoking cessation efforts in people with schizophrenia deserves significant attention.

This project was funded by the National Institutes of Mental Health (NIMH R03 MH60887-01; Kelly, PI) and the Advanced Centers for Intervention and Services Research (NIMH P50 MH40279; Carpenter, PI).

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POS1-68 ADOLESCENT SMOKING AND DEPRESSION: EVIDENCE FOR SELF-MEDICATION AND PEER INFLUENCE

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The nature of the relationship between adolescent smoking and depression is unclear and the mechanisms that account for the relationship have received little investigation. The present study sought to clarify the temporal precedence for smoking and depression and to determine whether these variables are linked indirectly through peer smoking and physical activity. The sample was composed of 1,011 adolescents participating in a longitudinal study of the biobehavioral predictors of smoking adoption. In this prospective cohort study, smoking, depression, peer smoking, physical activity and other covariates were measured annually from mid adolescence (9th grade; age 14) to late adolescence (12th grade, age 18). Parallel Processes Latent Growth Curve Models supported a bi-directional relationship between adolescent smoking and depression, where higher depression symptoms in mid adolescence predicted increased smoking from mid to late adolescence (ages 14-18 years old). A significant indirect effect indicated that higher depression symptoms across time predicted an increase in the number of smoking peers, which in turn predicted smoking progression from mid adolescence to late adolescence. Lower levels of physical activity at age 14 helped explain the impact of depression on smoking at baseline, but not across time. Alternatively, smoking progression predicted a deceleration of depression symptoms over time. This in turn predicted an increase in the number of smoking peers, which in turn predicted acceleration in depression symptoms across time. The current study provides the first evidence of bi-directional self-medication processes in the relationship between adolescent smoking and depression and highlights peer-smoking mechanisms for the comorbidity.

This study was supported by a Transdisciplinary Tobacco Use Research Center grant from the National Cancer Institute and the National Institute on Drug Abuse (P50 DA008771-01; Kelly, PI). This work was supported by the Center for Intervention and Services Research (P50 MH40279; Carpenter, PI) and the Department of Veterans Affairs (SDP De-003 and Rapid Response Proposal 07-037).

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PERCEPTIONS OF PARENTAL ATTITUDES REGARDING ADOLESCENT TOBACCO USE: CHANGES OVER NINE YEARS


Previous research has shown that parents with permissive attitudes toward smoking have been found to be more likely to have teens that use tobacco. In fact, research has found that parental disapproval of smoking is even more influential on an adolescent’s decision to smoke than peer modeling or smoking itself. It seems reasonable to expect that parental attitudes toward tobacco use among teens would change as their offspring mature. However, changes in parental attitudes over time have not been examined to date. To identify perceived changes in parental attitudes over time, this study examined parental attitudes toward smoking over time. Further study of the implications of increasing parental acceptance of smoking is needed.

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PARENTAL ATTITUDES TOWARD TOBACCO USE PREDICT OFFSPRING’S SMOKING HABITS IN YOUNG ADULTHOOD

Leslie A. Robinson, Ph.D.*, Ashley A. Jackson, B.S., Khatidja S. Ali, M.S., and Ali M. Yurusak, M.A.; The University of Memphis

A number of recent studies have focused on the influence of parental attitudes toward teen smoking on their child’s likelihood of tobacco use. Although cross-sectional investigations are more common, several longitudinal studies (e.g., Andersen et al., 2002; Sargent & Dalton, 2001) have recently been conducted. These studies have indicated that parental approval of smoking has been associated with smoking onset among offspring up to nine years later. However, this research has been limited in two important respects. First, the samples used in these studies have consisted primarily of Caucasian youth. Previous research has suggested that African American families have stronger prohibitions against teen smoking, but no research to date has extended the study of the influence of parental attitudes over time. Further study of the implications of increasing parental acceptance of smoking is needed.

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CIGARETTE SMOKING PATTERNS FOLLOWING A CARDIAC EVENT: RESULTS FROM A NATIONAL REPRESENTATIVE 3-YEAR LONGITUDINAL SURVEY

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Cigarette use is a well-known risk factor for cardiac morbidity, such as a myocardial infarction, angina pectoris, arrhythmias, and heart failure (e.g., congestive). Therefore, the occurrence of a cardiac event may be considered an opportunity Teachable Moment (TM) to deliver smoking cessation interventions. To date, there have been no national population studies examining smoking patterns following cardiac event, as much of what is known is derived from treatment studies or geographically limited samples. This study provides the first nationally representative estimates of smoking patterns (i.e., no change in smoking, cessation, >25% reduction in the number of cigarettes smoked per day) and associated characteristics following the diagnosis of a cardiac condition. Our analysis is based the National Epidemiologic Survey on Alcohol and Related Conditions (NESSARC), a representative sample of U.S. adults aged 18+ interviewed in 2001 and 2002 (n=43,053) and reinterviewed in 2004 to 2005 (n=34,653). We identified 598 smokers at W1 that also had a cardiac event in the prior 12 months. Of the smokers (pop est. 3.3 million) that had a cardiac event at W1, 18.5% (pop est. 620,000) reported abstinence at the 3-year follow-up, and 27.4% (pop est. 919,000) reported a significant (e.g., >25%) reduction in quantity smoked. Following a cardiac event, older respondents were more likely to make positive behavioral changes in smoking patterns (i.e., cutting down or quitting) compared to younger respondents. Cutting down was more common than quitting for those younger than age 68. However, this pattern was reversed for those aged 68 or older, where respondents were more likely to report quitting than cutting down. The occurrence of DSM-IV Major Depressive Disorder after the cardiac event significantly predicted a decreased likelihood of successful 3-year cessation. No effects were observed between anxiety disorders or levels of physical impairment and changes in smoking patterns. To increase rates of successful cessation following a cardiac event, these findings highlight the need for developmentally appropriate TM-based interventions that also address co-occurring mood disorders.

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ASSOCIATION BETWEEN BMI AND INITIATION OF SMOKING AMONG U.S. ADOLESCENTS

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Background: Both elevated body mass index (BMI) and smoking are risk factors for poor health outcomes. Obesity has been linked to smoking initiation among girls, but influence on smoking initiation across the spectrum of BMI has not been fully described.

Objective: To examine the relationship between BMI and smoking initiation in a U.S. nationally representative sample of adolescents.

Design/Methods: A cross sectional sample of 4575 U.S. adolescents, aged 12-16 years, was surveyed by phone as part of a national study of media and substance use. Self-reported weight and height were converted to age and gender adjusted BMI z-scores (BMiz). Ever-smoking was modeled as a function of BMiz, controlling for socio-demographics, media use, and personality characteristics (sensation seeking and rebelliousness) using logistic regression.

Results: Of 3586 subjects with complete data, mean age was 12 (SD = 1.4), mean BMiz was 0.36 (SD = 0.99) and 766 (21.4%) had ever smoked. Using BMI categories of obese (95thile or higher), overweight (85 to 95thile), normal weight (5 to 85thile) and underweight (<5thile) as recommended by the U.S. Centers for Disease Control, 9.6% of subjects were obese, 16.2% overweight, 71.4% normal weight and 2.8% underweight. In a crude analysis, ever smoking increased by 28% (OR 1.28, CI 1.17-1.39) for each 1 SD increase in BMiz throughout the BMiz spectrum. The following covariates were related to BMiz and ever-smoking: parent education, parent, sibling and friend smoking, household income, TV viewing, having a TV in the bedroom, sensation seeking, and rebelliousness. After controlling for socio-demographics, media use and personality covariates, the adjusted OR for ever smoking was 1.17 (95% CI 1.05, 1.29) for each 1 SD increase in BMiz.

Conclusions: This study identifies a linear relationship between BMiz score and initiation of smoking in teens. The association is consistent throughout the spectrum and not confined to overweight or obese adolescents. Further studies to explore this relationship may provide insight into common etiological mechanisms for development of these two significant health risks.

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POSTER SESSION 1

**POS1-77**

**SELF-REPORTED SMOKING BEHAVIOR IN COLLEGE STUDENTS**

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Smoking prevalence among college students exceeds the national average. Given inverse relationships between education, income, and smoking, the rise in smoking among college students is not well understood. As researchers develop interventions annually for college smokers, it is important to understand the characteristics and social factors related to cigarette smoking in this population. The purposes of this study were to (1) use established definitions to describe the smoking status of college students, (2) compare self-identified smokers and non-smokers on demographic, personal smoking behavior, and social factors related to smoking among college students at central New York colleges and universities (N=396) completed assessments of demographics, personal smoking behavior, and smoking among their peer group and family. Current smoking was defined as: smoked at least 100 lifetime cigarettes with current smoking on some or most days. Students who averaged 1-5 cigarettes per day were light smokers, and those reporting no current smoking were ex-smokers. Results indicated 23% of college students perceived themselves as smokers and 77% as non-smokers. Using established definitions, 8% of students were misclassified, such that 23% were current smokers, 69% non-smokers, 5% ex-smokers, and 3% light smokers. College smokers were mostly male (64%), Caucasian (66%) and had a higher household income compared to non-smokers. Interestingly, 51% of perceivers of non-smokers had a lifetime history of smoking, and 13% reported smoking in the past month. Compared to non-smokers, college smokers had more friends and parents who smoke. In conclusion, a small proportion of college students with a previous smoking history may be misclassified. Self-reported non-smokers may have smoked a cigarette in their lifetime or as recent as the past month. The profile of college student smokers in this study differs somewhat from the general population. Consistent with prior research, the smoking status of parents and peers are related to college students’ smoking. College smokers represent an important population for secondary prevention efforts, to reduce the likelihood of increased smoking behavior and dependence.

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**POS1-79**

**TOBACCO STARS: IDENTIFYING THE ORGANIZATIONAL BLUEPRINT OF STATE TOBACCO CONTROL SYSTEMS**

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Tobacco control activities are organized primarily in state tobacco control programs. Over the past few decades there has been an increase in the use of systems approaches to developing these programs; however, little has been done to evaluate the programs as systems. This study used social network analysis to examine state tobacco control programs in eight states. We hypothesized that, although state programs may vary in the number of partners and types of interactions among these partners, a blueprint exists that describes a common organizational structure underlying every state tobacco control program. Levels of contact and integration among key tobacco control partners in each state were measured. Program partners represented one of six categories: lead agency, contractor and grantee, coalition, voluntary and advocacy, other state agency, and advisory and consulting. Although networks differed from state to state, agencies of different types played similar roles in the networks. Using these similarities, we developed two blueprints identifying common organizational structures within programs. The program lead agency inhabits the central position in an organizational “star.” The blueprints were validated using the study data. These blueprints provide organizational models for existing programs faced with changes in funding and political support and for new programs developing new organizational structures. In addition, this study contributes to the growing evidence supporting the development of recommendations for structuring effective public health systems.

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**POS1-80**

**BRIDGING THE DISCOVERY TO DELIVERY GAP IN PUBLIC HEALTH RESEARCH: LESSONS FROM SECONDHAND SMOKE**

Jenine Harris*, Doug Luke*, and Sarah Shelton*; Saint Louis University; Washington University

Public health initiatives often focus on the discovery of risk factors associated with disease and death. While this is an important step in protecting public health, recently we have recognized that we must move along the continuum from discovery of risk factors to delivery of interventions, and improve the quality and speed of the translation of scientific discoveries into practice. To understand how public health problems move from discovery to delivery, citation network analysis was used to examine scientific communication among researchers. Forty years of original articles (n=1,877) and summary documents (e.g., 1986 Surgeon General’s Report) on secondhand smoke were analyzed. Citation patterns showed discovery and delivery to be distinct areas of original secondhand smoke research. Despite sharing the common goal of understanding and reducing the impact of secondhand smoke, there was a lack of cross-citation between these two areas with only nine citation connections between their main paths. Among original articles, a discovery article was 83.5% less likely to cite a delivery article (OR=0.165; 95% CI: 0.139-0.197) and a delivery article was 64.3% less likely (OR=0.357; 95% CI: 0.330-0.386) to cite a discovery article than a delivery article citing another discovery article. A link between two delivery articles was 4.34 times as likely (OR=4.349; 95% CI: 4.021-4.704) as a link between two discovery articles. Instead of direct citation links between original research articles, summary documents were commonly cited by both discovery and delivery researchers, providing a bridge between these two areas. While effective in bridging this gap, the reliance on summary documents may be a contributing factor in the lengthy lag time between discovery of health outcomes and delivery of policy and practice interventions.

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Progress in tobacco control and other areas of health research is thought to be heavily influenced by the extent to which researchers are able to work with each other not only within, but also across disciplines. This study provides an examination of the extent to which researchers in the area of tobacco harm reduction work together. Specifically, data were collected in 2005 from a national group of 68 top tobacco control researchers from eight broadly defined disciplines representing 17 areas of expertise. Network analysis was utilized to examine the extent to which these researchers were engaged in research that was interdisciplinary or transdisciplinary, based on the outcome or product attained. Findings revealed that interdisciplinary network ties were much denser than transdisciplinary ties but that researchers in some disciplines were more likely to work across disciplines than others, especially when synergistic outcomes resulted. The study demonstrates for the first time how tobacco control researchers work together, providing direction for policy officials seeking to encourage greater transdisciplinarity. The study also demonstrates the value of network analysis methods for understanding research relationships in one important area of health care.

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POSTER SESSION 2

PREVALENCE AND CHARACTERISTICS OF MARIJUANA SMOKERS IN TOBACCO CESSATION TREATMENT

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Use of other drugs may influence success in smoking cessation treatment. However, use of marijuana is often not considered in cigarette cessation treatment trials. In this study, we examined the prevalence of marijuana smoking, and related risk factors, among smokers enrolled in a clinical tobacco cessation trial. Participants were 213 healthy adult cigarette smokers enrolled in the Chicago STOP Smoking Research Project, aged 21-65 years. They smoked 7-35 cigarettes daily, and did not meet criteria for drug or alcohol dependence within the last year. Data were derived from several baseline measures, including the FTND, Barrett Impulsivity Scale (BIS-11), Monetary Choice Questionnaire for delayed discounting, and Time Line Follow-Back and Substance Use Questionnaires. In this sample, 30% were marijuana smokers, including 12% (26/213) who reported using marijuana only in the last year. Compared to non users, current marijuana smokers were younger (36 vs. 46 yrs), more likely to report being single (54% vs. 33%), and more likely to engage in higher rates of binge drinking (58% vs. 31%) (p<0.05). Past year marijuana smokers were intermediate on most of these variables. Current marijuana smokers also had lower FTND scores and baseline CO levels compared with non users (p<0.05). Finally, even after controlling for age, current marijuana smokers had higher delayed discounting (kappa scores), and Time Line Follow-Back and Substance Use Questionnaires. In this sample, 30% were marijuana smokers, including 12% (26/213) who reported using marijuana only in the last year. Compared to non users, current marijuana smokers were younger (36 vs. 46 yrs), more likely to report being single (54% vs. 33%), and more likely to engage in higher rates of binge drinking (58% vs. 31%) (p<0.05). Past year marijuana smokers were intermediate on most of these variables. Current marijuana smokers also had lower FTND scores and baseline CO levels compared with non users (p<0.05). Finally, even after controlling for age, current marijuana smokers had higher delayed discounting (kappa scores) and BIS-11 total, and its subscales including Attention, Self-Control, Perseverance, and Attentional Impulsiveness (p<0.05). In sum, marijuana smoking was moderately prevalent in this sample of smokers enrolling in tobacco cessation trial, and those who do smoke marijuana may be less nicotine dependent, perhaps due to concomitant marijuana smoking, than non users. Marijuana smokers also exhibited several risk factors that may affect their tobacco cessation success, including younger age, never married, binge alcohol drinking, and higher levels of impulsivity and inability to delay rewards. Future research on co-morbid marijuana and tobacco smokers in larger samples is warranted.

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BUPROPION USE IN PREGNANT SUBSTANCE-DEPENDENT SMOKERS

M.S. Chiscolm\(^4\)*, M. Tuten, E.C. Pfeil, E.C. Strain, and H.E. Jones, Johns Hopkins University School of Medicine

Objective: Both depression and smoking are highly prevalent in pregnant substance-dependent patients and are associated with adverse maternal and neonatal outcomes. Currently, bupropion’s acceptability, tolerability and efficacy as an antidepressant and smoking cessation agent in pregnant substance-dependent women are not known. It was hypothesized that pregnant women prescribed bupropion for depression would: (1) report a similar antidepressant effect compared to women prescribed citalopram/s-citalopram (antidepressant medications not indicated for smoking cessation treatment); (2) smoke significantly fewer cigarettes compared to women prescribed citalopram/s-citalopram; and (3) smoke fewer cigarettes compared to women not prescribed any antidepressant medication.

Methods: Retrospective chart review study. N=170 pregnant women. 39 pregnant substance-dependent smokers (bupropion n=9; citalopram/s-citalopram n=12; no antidepressant medication, n=18) were available for final analyses. Mean (SD) time between medication initiation and final follow up evaluation was 15.2 (10.4) weeks.

Results: Only two patients (one each group) stopped medication by time of the final visit. Changes from baseline to final follow-up mood rating (p=0.890) and smoking self-report (p=0.334) were similar between medication groups; mean (SD) decrease in number of cigarettes smoked was not significantly different between bupropion, citalopram/s-citalopram, and no-medication groups, although there was a trend for greater reduction in smoking for the bupropion group (-8.75 (12.1), -0.91 (7.7), and -5.20 (10.2) cigarettes/day (p=0.243), respectively). Despite experiencing high levels of discrimination, African Americans agreed to participate in a research study. Following completion of this clinical trial, we will explore the role of discrimination on smoking cessation outcomes.

Funding: This research was conducted at the University of Kansas School of Medicine with support from the NIH (R01 CA091912-07).

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EXPERIENCES OF DISCRIMINATION AMONG AFRICAN-AMERICAN LIGHT SMokers

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Introduction: African-Americans (AA) experience racial discrimination in different contexts. Experience of discrimination is associated with smoking status.

Objective: This study describes demographic (age, gender, education, employment), social (family, friends), and psychological (stress, depression) and examines their association with self-reported experience of discrimination among African American light smokers.

Methods: Kick at Swope (KIS III) is an ongoing double-blind, placebo controlled, randomized trial evaluating the efficacy of bupropion compared to placebo along-side health education counseling for smoking cessation among African-American light smokers (< 10 cigarettes per day). The experience of discrimination score is a sum of nine self-reported experiences of racial discrimination. Total score was categorized into 0-2 (low discrimination) and > 3 (high discrimination). Baseline data from 161 African-Americans light smokers were analyzed for this study.

Results: Participants smoked an average of 8.1 cigarettes per day (SD=2.8), were predominantly female (64%), and had a mean age of 46.8 (SD=11.5). The majority of participants reported experiencing high levels of discrimination (78%). Experience of discrimination was not associated with gender, age, income, education, depression, stress and number of cigarettes per day. Compared to those reporting high experiences of discrimination, participants reporting low experiences of discrimination had lower scores on the Fagerström Test of Nicotine Dependence (M=3.91, SD=1.63).

Conclusion: African-American light smokers reported experiencing high levels of discrimination independent of sociodemographic or psychological factors. Despite experiencing high levels of discrimination, African Americans agreed to participate in a research study. Following completion of this clinical trial, we will explore the role of discrimination on smoking cessation outcomes.

Funding: This research was supported by NIDA DA023186 and DA12403.

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POS2-4
FACTORS ASSOCIATED WITH IMPLEMENTING HOME SMOKING RESTRICTIONS AMONG SMOKERS ENROLLED IN A TWO YEAR CLINICAL TRIAL

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Home smoking restriction (HSR) can be a mediator for smoking cessation and can reduce health risks for those who live with smokers. The purpose of this sec-

ondary analysis is to examine implementation of home smoking restriction among rural smokers who did not prohibit smoking in their home at baseline and deter-
mine factors associated with successful implementation of HSR over the ensuing 24 months. The parent study is a randomized clinical trial, Kan Quit, designed to evaluate the effectiveness of a disease management smoking cessation program among rural primary care smokers. Of 607 participants who completed baseline and 24-month assessments, 265 (43.7%) did not have any HSR rules at baseline and were included in this analysis. At 24 months, 116 (43.8%) of these smokers had implemented new HSR rules, including 43 (64.2%) of 67 participants that had quit smoking and 73 (36.9%) of 198 persistent smokers. Among the persistent smokers, those who had made previous quit attempts were more likely to imple-

ment HSR (OR 2.1 95% CI 1.1 - 4.0 p=0.02) while those with hypertension were less likely to implement HSR by 24 months (OR 0.48 95% CI 0.3-0.9 p=0.019).

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POS2-5
VARIABLES RELATED TO SMOKING BEHAVIOR AMONG IMMIGRANTS FROM THE FORMER SOVIET UNION

Cathy J. Baker, Ph.D.*;*, and Karen Ajiejevych, Ph.D.*; Case Western Reserve University; *Ohio State University

Description of cigarette smoking behavior and beliefs in high-risk ethnic groups is a critical step to bringing cultural considerations into tobacco cessation inter-

vention. This study focused on variables related to smoking behavior among immigrants from former Soviet Union (FSU) countries, with high smoking preva-
lence (53-63% men), now living in the U.S. A descriptive, correlational design was employed with 80 participants immigrating within the last 20 years, including men and women, smokers and non-smokers. Study variables included depressive symptoms, acculturation, acculturative stress, level of tobacco use, salivary coti-

nine, nicotine dependence, decisional balance, and reasons for smoking. Results included high identification with both dominant and ethnic cultures, though ethnic

identification was significantly higher (N=80). Moderate levels of acculturative stress were found, despite an average of 12 years since emigration. Neither accultur-

ation nor acculturative stress were significantly correlated with numbers of years since immigration. Depression score was positively correlated with accultur-

ative stress, with 52% scoring above the instrument’s cut-point for further evalua-

tion. Depression was negatively correlated with dominant society immersion and positively correlated with ethnic society immersion. In current smokers (n=26), depression was negatively correlated with number of cigarettes smoked per day (CPD). A regression model including the Craving and Habit subscales from the

American College of Obstetricians and Gynecologists established the well-

POS2-6
ARE OBSTETRICIANS FOLLOWING BEST-PRACTICE GUIDELINES FOR ADDRESSING PREGNANCY SMOKEING? RESULTS FROM NORTHEAST TENNESSEE

Beth A. Bailey, Ph.D.*, and Laura Jones Cole, M.S., Department of Family Medicine, East Tennessee State University, Johnson City, TN

Background: The rate of pregnancy smoking in Northeast Tennessee is three times the national average, and more than twice the rate for the rest of Tennessee. The American College of Obstetricians and Gynecologists established the well-

en manpower. For 5 A's method of smoking cessation counseling (ask, advise, assist, and arrange) as a standard component of prenatal care in 2000.

Objective: The purpose of this investigation was to describe the use of the 5 A’s in prenatal care in Northeast Tennessee, and to evaluate provider attitudes toward and willingness to address pregnancy smoking. Methods: Surveys were distrib-

uted to all obstetric practices in a six-county area in Northeast Tennessee.

Results: Two thirds of surveys were returned. While all respondents indicated they asked all pregnant patients about smoking initially, only one quarter always identified and documented smoking status at every visit. Two thirds indicated they always gave their pregnant smokers clear, strong, and personalized advice to quit. Fewer than one quarter of providers reported always assessing willingness to quit, providing quit assistance, or arranging for follow-up. While all providers indicated they believe that pregnancy smoking affects the health of the unborn child, less than half indicated this effect was severe, and only half indicated that addressing smoking during a clinical encounter was of significant value. Only 2 in 5 respon-

dents were very confident in their ability to recommend behavior change related to smoking, and only half felt that recommending behavior change would be effective. Reasons for not using the 5 A’s method on a regular basis included lack of time, not knowing where to send patients for further treatment, and a belief that an intervention would not be effective.

Conclusions: The majority of obstetric providers in Northeast Tennessee are not following ACOG recommendations for addressing pregnancy smoking. Efforts to address high rates of pregnancy smoking in Northeast Tennessee should include a facilitation of the effective use of smoking cessation interventions in prenatal care.

State of Tennessee, Governor’s Office of Children’s Care Coordination.

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POS2-7
PREVALENCE AND PREDICTORS OF TOBACCO TREATMENT IN HOSPITALS: THE ROLE OF JCAHO CORE MEASURE STATUS

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Hospitalized smokers are a large, important, but undertreated population. This study examines the reach of tobacco treatment services at a large urban academic hospital and identifies predictors of referral and treatment. Electronic medical record data were downloaded for all smokers admitted to a 475-bed academic medical center hospital over a one-year period. Of 21,356 admissions, 3,131 (15%) were smokers during the past 30 days. Current smokers were predominantly White and spoke English. Slightly more than half were male. The mean age was 45 years. Most had smoked more than 10 years and one in five smoked more than one pack of cigarettes per day. Over half (53%) were admitted through the emergency department, with the majority admit-
ted into the medical and surgical services. The median length of stay was 3 days. More than 1 in 4 smokers were referred to the specialty service and nearly 1 in 5 received treatment. Logistic regression models found that JCAH0 "core measure" status (patients with heart failure, myocardial infarction, and pneumonia) was the strongest predictor of referral, followed by a history of smoking over 10 years (AOR 2.34 95%CI 1.69-3.25 p<0.001 and AOR 2.10 CI 1.69-2.61 p<0.001, respecti-
vely). Conversely, smokers admitted for emergency medical care (AOR 0.79 CI 0.66-
0.95 p=0.01) were less likely to be referred compared to those admitted elec-

tively. Of those referred to surgical (AOR 0.46 CI 0.38-0.56), obstetric (AOR 0.60 CI 0.39-0.92), and psychiatric services (AOR 0.35 CI 0.25- 0.50) were less likely to be referred for tobacco treatment compared to those treated on medical servic-
es (p<0.001). Of those referred, smokers with longer lengths of stay (4-6 days AOR 2.31 CI 1.54-3.46, > 6 days AOR 1.78 CI 1.20-2.65 p=0.0003) and those admitted through the emergency (AOR 1.42 CI 1.01-1.92 p=0.02) were more like-
to actually receive services. JCAHO core measure designation appears to secure better referral. To capitalize on hospitalization as a "teachable moment," other subpopulations, such as psychiatric patients, deserve attention. Recommendations for clinical practice and research will be discussed.

The research was conducted at the University of Kansas School of Medicine with support from NIH National Cancer Institute (R01 CA091912).

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POS2-10 CANDIDATE GENE-ASSOCIATIONS WITH AGE-AT-ONSET AND SMOKING QUANTITY
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Purpose: Earlier age-at-onset of smoking is associated with both a higher level of tobacco dependence and lower cessation rates. These associations may have a genetic basis. The purpose of this study was to examine candidate genes that may be associated with these smoking variables.

Methods: Study subjects were male or female, 18 years of age or older and smoking 10 or more cigarettes per day at baseline. The study was open-label whereby subjects were given 10 weeks of NRT and were followed up at 8 and 10 weeks post-quit date. Follow-ups at 6 months were also attempted. To date, 455 DNA samples have been collected. Selected SNPs for the following candidate genes were analyzed with respect to their association with age-at-onset of daily smoking and cigarettes per day at baseline: NRXN1, GABRE, GABRA2, GABRA4, CHRNA5.

Results: The mean age-at-onset of daily smoking was 17.2 +/- 4.6 years and 65% of the sample smoked 20 or more cigarettes per day at baseline. COMT, rs737865 1/1 genotype was significantly associated with a later age-at-onset of daily smoking (F=3.66, p=0.027), as was NRXN1, rs7271498 1/1 genotype (F=4.53, p<0.001), whereas CHRNA3, rs1051730, and CHRNAs, rs1969968 1/2 genotypes were significantly associated with a higher number of cigarettes per day (F=3.68, p=0.026 and F=4.13, p<0.017, respectively).

Conclusions: The catecol-O-methyltransferase (COMT) gene has been implicated in many previous studies to be associated with tobacco dependence. The neurexin gene (NRXN1) has recently been shown to be associated with tobacco dependence in both European and African-American populations. These current findings provide further support for this association. Analysis of the association of these genes to treatment outcomes at end-of-treatment and at 6-months will also be presented.

Ontario Ministry of Health Promotion.

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POS2-12 THE OTTAWA MODEL FOR SMOKING CESSATION HOSPITAL-BASED PROGRAM: EVALUATION OF QUIT RATES BEFORE AND AFTER PROGRAM IMPLEMENTATION
Robert D. Reid, M.B.A., Ph.D., Kerri-Anne Mullen, M.Sc., and Andrew L. Pipe, C.M., M.D., University of Ottawa Heart Institute

Background: Smoking causes numerous health problems frequently leading to hospitalization, particularly for cardiovascular disease, respiratory illness and many cancers. Ironically, few Canadian hospitals have in place systems, policies and procedures to support consistent, effective identification and treatment of tobacco users. Recently, certain Canadian hospitals have introduced the Ottawa Model for Smoking Cessation (OMSC), an institutional approach to identify and treat tobacco users, pioneered by the University of Ottawa Heart Institute.

Objective: The primary objective of this evaluation was to compare abstinence rates among smokers six months after hospital discharge, pre- and post-introduction of the OMSC.

Methods: An interrupted time series design was used. Two continuous samples of smokers were identified from admissions to nine hospitals in Eastern Ontario (CANADA). The first sample was identified before introduction of the OMSC and the second sample was identified after the program had been in place for at least six months. Both samples of smokers were contacted six months following hospital discharge to ascertain smoking status. The primary outcome of interest was self-reported continuous abstinence for the six-month period following hospital discharge. Logistic regression was used to compare the likelihood of smoking abstinence pre- and post-program implementation.

Results: Complete outcome data were available for 160/228 (70.2%) and 142/203 (69.9%) of the 1st and 2nd samples, respectively. Subjects without follow-up data were considered smokers for the purposes of analysis. The continuous abstinence rate six months after hospital discharge was 25.1% in the post-intervention sample compared to 14.9% in the pre-intervention sample (unadjusted OR =1.91; 95% CI: 1.18 to 3.10; p=0.008). The OR adjusting for age, gender, cigarettes per day, smoking-related diagnosis (yes/no), and hospital was 2.09 (95% CI: 1.25 to 3.52; p=0.005). Interpretation: Introduction of the OMSC was associated with statistically significant and clinically important improvement in long-term smoking cessation among hospitalized smokers.

Health Canada; Ontario Ministry of Health Promotion.

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POS2-13 GENDER DIFFERENCES AMONG SMOKERS RECEIVING INTERVENTIONS FOR TOBACCO DEPENDENCE IN A MEDICAL SETTING

Objective: The purpose of this study was to assess differences between women and men receiving treatment for tobacco dependence through a clinical treatment program.

Methods: We conducted a retrospective review of clinical data collected on 2,139 ambulatory and 1,259 hospitalized smokers receiving individualized tobacco dependence treatment from Jan 1, 2004, to Dec 31, 2005, through the Mayo Clinic Nicotine Dependence Center.

Results: Overall, female smokers smoked less than males (p < 0.001); were less likely to have received treatment for alcoholism (p < 0.001); were more likely to have received treatment for past depression (p < 0.001); were also less likely to have started smoking prior to 18 years of age (p = 0.004 and p = 0.008 for ambulatory and hospitalized patients, respectively); were less likely to be married (p < 0.001); were less likely to be tobacco dependent (hospitalized smokers only, p = 0.04); and were more likely to have received a prescription for a smoking cessation medication (ambulatory smokers only, p = 0.034). After adjustment for baseline characteristics, women and men did not differ in tobacco abstinence outcomes.

Conclusion: Although many gender differences are present among patients treated in a large ambulatory and hospital based tobacco treatment programs, gender is not associated with failure to achieve smoking abstinence. This study was funded by the Mayo Clinic Cancer Center.

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A PILOT STUDY TO TEST THE FEASIBILITY OF PRE-CESSATION WITHDRAWAL EXPOSURE AND RAPID PUFFING AMONG ADULT SMOokers: MOTIVATED TO QUIT

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This pilot project was designed to test the feasibility of an intensive pre-cessation behavioral treatment program among adult smokers motivated to quit smoking. Treatment consisted of up to 7 practice quitting sessions in the 3 weeks preceding a target quit date. Practice quitting sessions were intended to expose individuals to aversive withdrawal symptoms prior to quitting. Each practice quitting session was terminated by rapid puffing of up to 3 cigarettes to make the return to smoking following the period of abstinence less reinforcing. Twenty-three smokers were randomly assigned to one of four practice quitting schedules: control subjects (n=8) did not practice quitting; subjects in the low-intensity condition (n=5) practiced quitting 3 times for a total of 14 hours; subjects in the moderate intensity condition (n=6) completed 5 practice quitting sessions for a total of 32 hours; and subjects in the high-intensity condition (n=6) completed 7 practice quitting sessions for a total of 54 hours. All subjects were asked to attend 12 office visits in 4 weeks, complete 7 supervised rapid-puffing sessions prior to the target quit day, carry electronic diaries and complete brief reports every 2-4 hours for a total on practice quitting days and during the quit attempt, and complete brief follow-up interviews at 3- and 6-months post-quit. All subjects completed a series of questionnaires assessing depression, cessation self-efficacy, and a 6-week supply of 21-mg nicotine patches to use during the quit attempt. Adherence to this demanding treatment and assessment regimen was excellent. Subjects abstained in 82% of all assigned practice quitting sessions and completed brief reports for 96% of all follow-up interviews. Practice quitting and rapid puffing were well tolerated. Results suggested that intensive withdrawal exposure may increase the odds of quitting successfully and may reduce early craving and negative affect and enhance confidence related to quitting, although the study was under-powered to detect these effects.

This study was conducted while the lead author was at the University of Wisconsin-Madison. Supported by a grant from the University of Wisconsin Transdisciplinary Tobacco Use Research Center.

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PREVENTING SMOKEyING RELAPSE AMONG PREGNANT AND POSTPARTUM WOMEN: A RANDOMIZED CLINICAL TRIAL

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Pregnancy represents a unique window of opportunity for providing smoking relapse-prevention interventions. A large proportion of women are able to quit smoking during their pregnancy and abstain for several months; however the majority will relapse during their pregnancy or after delivery. To date, efforts to prevent smoking relapse during pregnancy and postpartum have been largely unsuccessful. This study evaluated the efficacy and cost-effectiveness of a series of relapse prevention booklets for the general population entitled, “Forever Free” (Brandon et al.; 2000, 2004). The goals of the current study were to adapt these booklets for pregnant women utilizing formative research methods (Phase I) and to test them in a randomized clinical trial with pregnant women (Phase II). The relapse-prevention booklets entitled, “Forever Free for Baby and Me” (FFB) were compared to a usual care condition (UC) receiving standard materials from the Moffitt Cancer Center and University of South Florida (n=60) were recruited in their 4th - 8th month of pregnancy, randomized to condition, and followed through 12 months post-partum. The FFB intervention consisted of 10 booklets, including a booklet for partners, distributed from enrollment until 8 months post-partum. UC participants received a newsletter entitled “Forever Free” bi-monthly. Participants in the FFB condition were significantly more likely to have read the FFB booklets (OR=2.1, CI=1.3-3.5, p<.005). Findings from this pilot study will be useful in the design of a larger clinical trial.

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SMOKING CESSATION IN HIV+ CLINICAL CARE SETTINGS: PRELIMINARY FINDINGS

Gary Humfleet*, Sharon Hall, Kevin Delucchi, and James Dilley, University of California - San Francisco

HIV-positive (HIV+) populations have higher rates of smoking than the general population and smoking puts HIV+ individuals at higher risk for HIV-related health problems. The present study reports preliminary findings from a clinical trial evaluating smoking treatment provided in HIV clinical care settings. Participants were randomly assigned to one of three treatments: 1) a six session individual counseling treatment, 2) a computer/internet based treatment, and 3) a minimal contact condition. Participants were followed through 12 months post-partum. The FFBeattempt is being conducted with a larger sample size.

This work was supported by the NIDA grants P50 DA09253, R01 DA2538, DA015791, & R15 DA17572.

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POS2-18 REASONS FOR UNDER-USE OF PHARMACOTHERAPY

Matthew J. Carpenter, Ph.D.1, Anthony J. Alberg, Ph.D., M.P.H., and Kathleen Cartmell, M.P.H., Medical University of South Carolina, Hollings Cancer Center

Despite proven efficacy of pharmacotherapy for smoking cessation, many smokers continue to either ignore or discount these proven cessation aids. In an ongoing population-based, telephone-based survey of South Carolina (USA) ever smokers (final N=1500), oversampled with minority smokers (30% non-white), we aimed to 1) examine different perceptions and beliefs about pharmacotherapy among and between former and current smokers, and 2) identify barriers/beliefs that may be specific to users vs. non-users of pharmacotherapy. To date, 520 current smokers and 626 former smokers have been surveyed. Among current smokers, compared to ever users of pharmacotherapy (33%), those who never used pharmacotherapy (67%) were more 1) concerned that they might get addicted to medications (p<0.001), and 2) hesitant to try samples of products even if provided by a physician (p=0.001), 3) likely to believe pharmacotherapy is ineffective (p=0.006), 4) likely to believe smoking is not harmful (p=0.017), and 5) that they did not need treatment (p<0.001) and specifically pharmacotherapy (p=0.001) to quit smoking. Never users of pharmacotherapy were also less motivated to quit than were current smokers who had previously tried cessation medication (p=0.001). Among former smokers, never users of pharmacotherapy (82%) were less concerned about medication safety (p=0.01) than were ever users, but there were no further attitudinal differences. These data, strengthened by a large and racially diverse sample, reaffirm recent research suggesting that non-use of proven pharmacological aids continues to be widespread, and that many factors other than cost alone inhibit their dissemination. Continued public education of evidence-based treatment is critical to translate clinical efficacy into population effectiveness.

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POS2-19 THE WISCONSIN PREDICTING PATIENTS’ RELAPSE (WI-PREPARE) QUESTIONNAIRE

Daniel M. Bolt, Ph.D.,1 Megan E. Piper, Ph.D.,1 Danielle E. McCarthy, Ph.D.,1 Sandra J. Japuntich, M.S.,1 Michael C. Fiore, M.D., M.P.H.,1 Stevens S. Smith, Ph.D.,1 and Timothy B. Baker, Ph.D.,1 University of Wisconsin; Rutgers University

Relapse is the most common smoking cessation outcome. Accurate prediction of relapse likelihood could be an important clinical tool, used to influence treatment selection or duration. The aim of this research was to develop a brief clinical relapse proneness questionnaire to be used with smokers interested in quitting in a clinical setting where time is at a premium. Diverse items assessing constructs shown to be related to relapse risk in previous research, such as nicotine dependence and self-efficacy, were evaluated to determine their independent contributions to relapse prediction. Candidate items were assessed among smokers motivated to quit smoking who enrolled in one of three randomized controlled smoking cessation trials. We selected 7 items with relatively non-overlapping content for the Wisconsin Predicting Patient’s Relapse (WI-PREPARE) measure—a brief, 7-item questionnaire tapping physical dependence, environmental factors and individual difference characteristics that is easy to score, suggests the nature of a patient’s relapse risk, and predicts short- and long-term relapse better than the Fagerström Test of Nicotine Dependence (FTND).

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POS2-20 DO NRT USERS ADMIRE THE PACKAGE INSERT?

A. Chmilo2, S. Gradi, and C. Kröger

Objectives: Outside clinical trials, nicotine replacement therapy (NRT) archives quit rates of 5% to 15%. The discrepancy between efficacy trials and effectiveness studies may be explained by non-adherence (Burns, Levinson, 2008). This study aims to describe the adherence or non-adherence of NRT users to recommendations given by the package insert.

Methods: The sample consists of 2,650 adult smokers who attended the German smoking cessation program “Das Rauchfrei – Programm”. It comprises six group sessions; it is based on cognitive behavioural therapy and includes booster telephone counselling. Within the program, NRT is introduced as a useful strategy; its use is recommended but not enforced. Among participants approximately 16% reported having used NRT at the end of the program. Out of these, a sub-sample of N=100 randomly selected NRT users was investigated by telephone survey six months after the last session. They were questioned on state of abstinence, type of NRT, start of NRT use and adherence to package insert, such as duration of NRT use, dosage and if they used it on a daily base or not.

Results: After six months, 27% of the sample reported to be still abstinent, 85% of the sample used NRT on a daily base. 70% used NRT less than a month, and 19% used NRT more than one, but less than two months. Among the “Less than 1 month” users 33% were still abstinent, among the “Less than 2 month” users 55% were still abstinent. Only 2% used NRT as recommended by the producers (Adherence to the package insert).

Conclusion: In a real-world setting, smokers attending a smoking cessation program do not adhere to the recommendations given by the package insert. As the results indicate, NRT is often used to short. Therefore, provided that the use of nicotine replacement therapy increases successful quitting, smokers who decide to use NRT should be advised insistently about the necessity of correct NRT use.

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POS2-21 INTEGRATING BRIEF SMOKING CESSATION INTERVENTIONS INTO DAILY NURSING PRACTICE IN ACUTE CARE HOSPITALS IN NORTHWESTERN ONTARIO, CANADA

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This presentation reports on the implementation of brief tobacco interventions into nursing practice in acute care hospitals across Northwestern Ontario. Although encouraged by licensing bodies such as the Registered Nurses Association of Ontario (RNAO) and the Ontario Medical Association, tobacco interventions are not required by hospital accreditation standards and few Canadian hospitals systematically offer tobacco cessation services. Baseline assessment of all 12 hospitals in NW Ontario, guided by the Precede-Proceed Planning Model, included tobacco use status of inpatients to determine intervention case-load, current inpatient tobacco cessation initiatives, and organizational tobacco cessation policies. Baseline assessment revealed: 1) average monthly case-loads for tobacco intervention of 5 patients in each community hospital and 107 patients in the regional hospital; 2) 86% of nurses believed that brief tobacco interventions were effective; 3) none of the hospitals had a tobacco intervention protocol. Baseline data revealed: 1) average monthly case-loads for tobacco intervention of 5 patients in each community hospital and 107 patients in the regional hospital; 2) 86% of nurses believed that brief tobacco interventions were effective; 3) none of the hospitals had a tobacco intervention protocol. Baseline assessments and RNAO best practices were then used to develop a bedside intervention, which was integrated into nursing care maps. The intervention included: asking patients about tobacco, advising patients to quit, assessing readiness to quit, recommending pharmacotherapy, assisting patients to quit (take home booklets and a 1-3 minute of counselling), and arranging follow-up referral to a counselor; community resources, smokers’ helpline information and/or tax referral). A contract was signed with the provincial smokers’ helpline for ongoing replenishment of cessation materials and a fax referral program.

Discussion: Support for the integration of the intervention into nursing practice was strong because it was based on nursing best practice guidelines. Keys to sustainability include integrating the intervention into clinical pathways, integrating outcomes for evaluation into program delivery, and partnering with the smokers’ helpline for patient follow-up and ongoing provision of patient materials.

This study was funded by the Northern Ontario Cancer Research Foundation.

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POS2-22 STOP-SMOKING SUCCESS IN THE ST. HELENA SMOKE-FREE LIFE RESIDENTIAL PROGRAM


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The Smoke-Free Life Program, a one-week residential program established in 1969 at St. Helena Hospital in California’s Napa Valley, was developed to assist U.S. and international participants with stopping smoking. Most participants in our residential program have attempted to stop smoking multiple times, and are highly dependent on tobacco. Strategies covered during the week include education regarding the harmful effects of smoking and benefits of stopping, behavioral modification counseling, implementation of an exercise program, spirituality, and good nutrition. Since 2001, use of medications to help control nicotine-withdrawal symptoms has been encouraged. In this presentation, we compare outcomes of 418 participants in the Program between 1988-1989 (Group A) with 205 participants in the Program between 2005-2006 (Group B). While the enrollees in both groups were similar with respect to gender (Group A, 57% female; Group B, 53% female), the participants in Group B were older (33.0 versus 50.4 years; P<.01), had a lower mean pack years of smoking (46.1 versus 52.7; p<.01), and had tobacco-dependence pharmacotherapy prescribed by a physician, with individual adjustments as needed. The self-reported seven-day point prevalence non-smoking rate at one year for Group A was 37.6 percent and for Group B was 58.0 percent (p<.0001). This difference remained highly significant after adjusting for gender, age, and pack years of smoking (odds ratio 0.47, 95% CI 0.33-0.68). Other characteristics of Group B participants include: length of time smoked, 33.6 years; cigarettes smoked, 27.1 per day; Fagerström (FTND) Score, 6.5; and Beck Depression Inventory-II Score, 13.3. In Group B, 28.1% had a history of alcoholism, 36.8% had a mental illness diagnosis, 55.8% had an abnormal apirgram, and 89.2% had cardiovascular disease. These data indicate that smoking cessation and tobacco abstinence are achievable in a one-week residential program. We conclude that impairment of episodic memory is a primary effect of nicotine withdrawal, which may be associated with continued use of tobacco and failures at abstinence efforts.

Texas Research Development Fund.

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POS2-25 YOUNG ADULT SMOKING: WHAT FACTORS DIFFERENTIATE EX-SMOokers, SMOKING CESSATION TREATMENT SEEKERS AND NONTREATMENT SEEKERS?

Janet Audrain-McGovern, Ph.D., Daniel Rodriguez, Ph.D., Kelli Rodgers, B.A., Jane V. Ceballos, B.A. & E., and Paul Wileyto, Ph.D., Department of Psychiatry, University of Pennsylvania

There is little information on the factors that influence young adult smoking prac­tices, even though this age group has the highest smoking prevalence. This study investigated psychosocial correlates of smoking status among young adults, ages 18–30 years old. Two hundred and ninety-four young adults completed a self-report survey regarding their health habits. Ex-smokers, smoking cessation treatment seekers, and non-treatment seeking smokers were compared on demographic and psychosocial factors derived from Behavioral Economic Theory. The results of a multi-nomial logistic regression analysis predicting smoking status revealed that nontreatment seekers, treatment seeking smokers who did and treatment seeking smokers who did not subsequently participate in a formal smoking cessation program were characterized by a lower level of substitute reinforcing compared to ex-smokers. Greater compensatory reinforcers and higher delay discounting differentiated nontreatment seeking smokers from ex-smokers and treatment seeking smokers who subsequently attended a smoking cessation program, but not treatment seeking smokers who did not attend a smoking cessation program. Nontreatment seekers were less likely to have higher depression symp­toms than ex-smokers. Treatment seekers who did not attend a smoking cessation program tended to live in a household with another smoker, to not have a college education, and to be non-white. These results highlight variables that might be important to consider in planning recruitment and treatment approaches for smoking cessation interventions for young adult smokers.

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POS2-23 EVIDENCE THAT EPISODIC MEMORY IMPAIRMENT DURING TOBACCO ABSTINENCE IS INDEPENDENT OF ATTENTIONAL MECHANISMS

Paul Merritt*, Adam Cobb*, Luke Moisissac*, Elliot Hirshman*, and Gabriel Cook*;

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Previous studies have demonstrated reductions in episodic memory during nicotine withdrawal. However these studies have been unable to dissociate memory reductions from losses in attention associated with tobacco abstinence. We sought to determine whether episodic memory reduction is a primary effect of nicotine withdrawal. Heavy smokers were tested when smoking normally and following 24 hours of abstinence. Participants were tested with a recognition memory task in which items were studied under full and divided attention conditions. Forward digit span, backward digit span and a Posner cuing task were also included as control measures. Withdrawal was associated with a reduction in memory performance that was independent of attention at encoding. We conclude that impairment of episodic memory is a primary effect of nicotine withdrawal, which may be associated with continued use of tobacco and failures at abstinence efforts.

Texas Research Development Fund.

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POS2-24 COMPARISON OF TWO SMOKING CESSATION BEHAVIORAL THERAPIES COMBINED WITH NICOTINE PATCH IN SCHIZOPHRENIA

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Compared to the general population, smokers with schizophrenia (SCZ) have reduced success in quitting smoking with usual approaches. This study tested two manualized behavioral counseling approaches—TANS or Medication Management (MM)— for smokers with SCZ that were motivated to quit. Mental health clinicians in mental health settings provided both treatments. The two treatments varied in intensity and frequency of sessions. TANS was twenty-four weekly 50 minute sessions of motivational interviewing including personal feedback reports, skills training and relapse prevention counseling. Medication management (MM) consisted of nine 20 min sessions distributed over 24 weeks. Both groups received the nicotine patch for 16 weeks that started on the target quit date (TQD). Eighty-seven subjects were randomized and attended at least one treatment session. Participants in TANS and MM were not different in baseline smoking or demographic characteristics. Twenty-one percent (n=16) of participants had continuous abstinence (CA) at 12 weeks after TQD, which was not significantly different between conditions (17.8% TANS vs. 23.8% MM, c2=0.428; p=0.488). There was also no difference between TANS and MM conditions in time to first smoking lapse or quitting on the TQD. Factors that did not impact smoking cessation at quit attempts included current or past substance use disorder. Subjects who attended on the majority of sessions in either condition (82%) were also more likely to quit on their TQD. Smokers in both groups significantly reduced smoking as measured by cigarettes per day and expired CO. Findings support that mental health clinicians can be trained to effectively help smokers with schizophrenia maintain tobacco abstinence. More research is needed to further improve treatment outcomes for this high-risk group.

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SRNT • Poster Session 2
DO ADOLESCENT SMOkers WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER (ADHD) HAVE GREATER NICOTINE WITHDRAWAL?

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Objective: Individuals with Attention-Deficit/Hyperactivity Disorder (ADHD) are more likely than their non-ADHD counterparts to initiate smoking and develop nicotine dependence; they may also have more difficulty quitting cigarettes. Recent research indicates that adults with ADHD experience more severe nicotine withdrawal symptoms than those without ADHD. However, little is known about nicotine withdrawal in adolescent smokers with co-morbid ADHD.

Methods: Among a sample of 134 nicotine-dependent adolescents entering a smoking cessation research study, 47 met DSM-V criteria for ADHD. All participants completed the Minnesota Nicotine Withdrawal Scale (MNWS) during their initial assessment. Responses on individual items (0 for non-response and 1+ for positive response) and MNWS total score were compared between ADHD and non-ADHD participants.

Results: Adolescent smokers with ADHD scored significantly higher on the MNWS total score than those without ADHD (p = 0.000016). Among the individual items within the MNWS, ADHD participants were significantly more likely to endorse symptoms of depressed mood (p = 0.012), insomnia (p = 0.047), difficulty concentrating (p = 0.002), restlessness/impatience (p = 0.002), and increased appetite (p = 0.014). They were additionally more likely to report high levels (3+) response of irritability/frustration/anger (p = 0.016) and anxiety/nervousness (p = 0.011).

Conclusion: Treatment-seeking adolescent smokers with ADHD are more likely to endorse nicotine withdrawal symptoms than those without ADHD. These results are consistent with recent findings in adults with ADHD, and highlight the need for further research on the complex issue of co-morbid ADHD and nicotine dependence, including the potential for overlap between symptoms of ADHD and nicotine withdrawal.

USE OF MEDICAL CLINICS TO RECRUIT SMOokers TO A SMOking CESSATION TREATMENT PROGRAM

Elaina Cook, Cindy Moran, M.A., Lynne Kohler, B.A., Stephanie Campetti, B.A., and Robert A. Schnoll, Ph.D., University of Pennsylvania

Medical clinics may serve as a viable way to enhance recruitment of smokers to treatment programs. This study describes our early efforts from our efforts to recruit smokers who are family members of patients receiving treatment in oncologic and orthopedic clinics for a smoking cessation treatment program involving behavioral counseling and transdermal nicotine. In 15 months, 153 relapses were screened for eligibility (44 oncology, 109 orthopedic); 29 oncology relatives were eligible (66%), vs. 57 orthopedic relatives (52%). The major reasons for ineligibility included: smoking too few cigarettes/day for pharmacotherapy, a medical contraindication for treatment, and a medication contraindication. More African-Americans were ineligible (67%), vs. Caucasians (42%; p < .05). African-American were more likely to be ineligible because of a contraindicated medical condition, compared to Caucasians; Caucasians were more likely to be ineligible for a contraindicated medication (40% vs. 56%, p < .05). A larger proportion of smokers recruited through the oncology clinics were deemed ineligible because of a contraindicated medication, vs. those recruited from an orthopedic clinic (43% vs. 14%), whereas smokers recruited through orthopedic clinics were more likely to be ineligible due to smoking less than the required level, compared to those recruited from an oncology clinic (50% vs. 29%). To this point, source of recruitment, gender, race, and level of nicotine dependence are not related to likelihood of enrolling in the smoking cessation program. Although this study is ongoing, the results thus far indicate that it is feasible to recruit smokers through medical clinics.

HOW ARE WOMEN PERFORMING IN A MODERN SMOking CESSATION PROGRAM?

S. Gradi, C. Kröger, S. Fliter, and D. Plontek

Introduction: Female smokers are overrepresented in the smoking cessation programs but recent studies show that they profit not as much as male participants from the different methods used for smoking cessation.

Aim: A newly developed German smoking cessation program “Das Rauchfrei – Programm” shall achieve with newest scientific methods and therapeutic techniques higher quit rates in women.

Methods: From May 2007 until April 2008, 2,560 participants were questioned at the beginning of the program. 51% of participants are female. Skilled trained in different outpatient settings (institutes for health education, factories, medical practice) all over Germany delivered the program. Three measurement times were realized (pre-test, post-test and a six months follow-up). Results: The average age in women is 48 years, they have a higher educational level, 78% are gainfully employed, 58% are married, the average body-mass-index is 24. They smoke 22 cigarettes in average, and 54% have high scores in a test for nicotine dependency. Preliminary data show that 92% of the women perform the quit day, at the end of the course, 52% of them are still non-smokers. One third of them show no weight gain after smoking cessation, another third gains up to six pounds.

Conclusion: Smoking cessation programs should try to target female smokers in the age between 20 and 40 years. Program contents should fit to women’s needs and maybe outline special features. Content of the “Rauchfrei – Programm” that meet those criteria for female participants are discussed.

Targeting smoking cessation programs to the ever-growing population of people living with HIV/AIDS represents an important public health priority. While smoking is associated with numerous adverse AIDS-related outcomes, existing evidence indicates that smoking prevalence is significantly higher in the HIV positive population (compared to the general population). Despite the need, few efforts to date have been made to target smoking cessation programs to this special population. The purpose of the current abstract is to describe the design, recruitment experience, and preliminary data from an ongoing smoking cessation efficacy trial being conducted at a large, inner-city HIV clinic serving a medically indigent multiracial population. In this randomized controlled trial, a cell-phone delivered intervention designed to overcome common barriers to treatment is being compared to a standard care treatment approach. Thus far, 80% of screened patients have consented to participate and 283 individuals have been enrolled. Participants have a mean (SD) age of 45.1 (7.6) years, smoke 18.7 (11.4) cigarettes/day, and began smoking at age 18.3 (11.4). On some sociodemographic characteristics include: 73% male, 77% report high school education or less; and 77% are not employed. Participants are predominately racial/ethnic minorities, including 72% African American and 11% Hispanic. HIV risk category is diverse, with 27.2% reporting MSM, 42.4% heterosexual contact and 16.6% injection drug use. Psychosocial assessment indicates that depressive symptoms are common (mean (SD) CES-D score of 22.1 (11.6)), and functional status is poor (mean (SD) MHS 41.4 (11.1) and PHS 40.1 (10.8)). Finally, 33.7% of the sample reports hazardous drinking as indicated by AUDIT scores, and 41.7% report illicit drug use in the past 30 days. In summary, participation in the trial has been very high, which indicates that appropriate smoking cessation programs can be conducted in busy HIV care centers. However, low socio-economic status, high rates of depressive symptoms, low functional status, and high prevalence of substance use may ultimately impact any smoking cessation program’s effectiveness.
UTILITY OF BEHAVIORAL THERAPY AND BIOMARKER ASSESSMENTS IN THE SELECTION OF PREGNANT WOMEN ELIGIBLE FOR NRT

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Few studies report on the efficacy of nicotine replacement therapy (NRT) in pregnant smokers. The US FDA approves use of nicotine patch in pregnant women only if they have failed to quit after behavioral therapy (BT). We are conducting a randomised clinical trial across four districts in the state of Oregon, USA, to examine the potential of modifying BT so that nicotine is randomized to participants who do not quit. Women are screened during prenatal care via audio- computer assisted screening instrument. Eligible women, who consent to participate, first receive an AHRQ recommended BT (visit 1). Women are assessed two weeks post-BT visit. Approximately 10% of women, who do not quit, are randomly assigned to receive nicotine or placebo with medication used during pregnancy. By visit 2, a subset of women who have not quit at visit 1, and who reported cessation and thus were not randomized into the trial. There were no statistical differences in any of the socio-demographic characteristics between quitters and non-quitters. The confirmation was in 7 participants using salivary cotinine (SC) and/or exhaled carbon monoxide (CO) levels. Only one participant did not confirm by biomarker. Among the 8 remaining quitters, only two did not show a decline in the SC value visit 2. The mean SC level for the 9 participants who reported cessation after BT was signifi- cantly lower than those who could not quit (91±104 vs. 195±108 ng/ml, p=0.002). The initial CO level in those who quit was lower than those who did not (5.9±3.7 vs. 10.3±6.8 ppm, p=NS). For quitters the SC level dropped 40ng/ml (p=0.1) and by 38ng/ml for non-quitters (p=0.008). CO dropped by 3.6ppm for quitters (p=0.02) and only by 2ppm for smokers who did not quit. The CO level continued to drop for quitters vs. non-quitters (2.8±1.7ppm vs. 8.3±3.5ppm, p=0.005). This data indicates that within our study population, 14% may be able to quit after BT and the remaining 86% may show significant reduction in cotinine levels. The mean cotinine levels in non-quitters continue to be sufficiently high (157±119ng/ml) to justify NRT. Our results show a benefit to using BT prior to NRT use.

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CULTURAL COMPETENCE IN SMOKING CESSATION TREATMENT: THE TEACH PROJECT FOR FRANCOPHONES

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Background: There is a need for cultural competence in smoking cessation treatment, especially among linguistic minorities, who may face additional barriers to treatment. American and Canadian linguists report that Francophone smokers, who may be of any age, are substantially higher among Francophones even when controlling for socio-economic status and education.

Objectives: Project TEACH is a university-accredited certifi- cate program designed to train Francophone health care practitioners in intensive smoking cessation counseling. This program is a culturally appropriate adaptation of the TEACH (Training Enhancement in Applied Cessation and Counseling) Project and could serve as a model for others’ development of culturally appropri- ate education programs and clinical resources.

Methods and results: First, TEACH for Francophones carried out a review of French-language clinical tools and client resources and compiled these into a doc- ument that has been disseminated to over 500 practitioners and groups via Web- based and direct contact requests. This document identifies gaps in the literature and comprises a catalogue of available cessation resources for practitioners and clients. In order to identify stakeholders’ needs, an assessment was conducted through an anonymous online survey, regional focus groups, and key informant interviews. Forty-nine health care professionals were consulted, and the results guided subject matter experts in adapting educational and clinical materials. This presentation will discuss the project’s model and methodology, with lessons learned and implications for other cultural adaptation/knowledge translation initiatives.

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SMOKING AND DEPRESSION: ASSISTING PRIMARY CARE PATIENTS USING A MOOD MANAGEMENT APPROACH TO QUITTING SMOKING—A PILOT STUDY

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Aim: Tobacco use, predominantly smoking, is the leading cause of preventable death in the US. The presence of both depressive symptoms and smoking is com- mon in primary care populations. However, current treatments for smoking cessa- tion are perceived to be difficult and only partially effective by smokers with depressive symptoms. This study investigated how to identify and refer smok- ers with depressive symptoms for a specialized smoking cessation mood management program and to examine the feasibility of implementing the program.

Methods: All consecutive adult patients identified as smoking in three participat- ing practices were given a brief survey to assess tobacco use, depressive: symp- toms (PHQ-9), history and medication-taking, during a specified 3-month study period. Patients were also offered the opportunity to participate in a 6-session tele- phone counseling program using a novel mood management approach. Patients were eligible for the program if they had current elevated depressive symptoms, a history of depression, or were currently taking antidepressant medication (with the exception of Zyban or Wellbutrin). Self-reported cessation was assessed at 3 months post quit date.

Results: Among the 284 smoking patients surveyed: 22% reported current mild, 17% moderate, 17% moderately severe, and 7% severe depressive symptoms; 53% a history of depression; and 34% were currently taking an anti-depressant medication. The average number of cigarettes smoked per day was 14.4 and there was a significant positive relationship between number of cigarettes smoked and severity of depressive symptoms (p<0.001). Fifty percent were interested in partici- pating in the smoking cessation program and, among those eligible and interest- ed, 40 patients enrolled. Seven completed the counseling program and six of those completed the 3-month follow-up. Four of the six quit smoking (47% quit rate).

Conclusions: Depressive symptoms, history and medication taking are common among smokers in primary care. Many patients express interest in participating in a smoking cessation program, however, few actually engage. Those participating demonstrated evidence of successful quit attempts.

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POS2-34 SMOKING PREFERENCE SURVEY: PSYCHOMETRIC PROPERTIES AND CRAVING TO SMOKE

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The Smoking Preference Survey (SPS) is a self-report measure designed to assess aversion to the smell, taste, and sight of cigarettes. Individual differences in smoking aversion may be related to the salience of smoking cues, thereby influencing the degree to which it is perceived as rewarding. Understanding this relationship could elucidate the effectiveness of order of treatment to salient smoking cues. In Study 1, 101 participants reported smoking status (i.e., current smoker, former smoker, non-smoker) and completed the SPS. In Study 2, 54 current smokers enrolled in a larger study completed several measures including the SPS, Fagerstrom Test for Nicotine Dependence (FTND) and the Questionnaire of Smoking Urges Brief (QS-U-B). Study 1 evaluated the internal consistency and factor structure of the SPS. In Study 2, a preliminary analysis of relationships between the SPS and several clinically relevant variables (e.g., craving) was conducted. The results of Study 1 indicated that the SPS demonstrated strong internal consistency (alpha = .96). A factor solution provided a good fit in the confirmatory factor analysis as reflected by several goodness-of-fit indices. All individual item factor loadings were strong (>.80) and statistically significant (p < .01). An ANOVA demonstrated a main effect for smoking status on SPS score (F (2, 97) = 50.57, p < .001). Post-hoc analyses demonstrated that significant differences existed between current and non-smokers, current and former smokers, and former and non-smokers. Furthermore, the SPS may be related to cigarette craving. Future research may further elucidate the relationship between smoking aversion and cue salience and evaluate whether aversion is an index relevant to abstinence and relapse.

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POS2-35 SMOKING AND HEALTHY LIFESTYLE INTERVENTION AMONG OVERWEIGHT SMOKERS WITH A PSYCHOTIC DISORDER: A PILOT TRIAL

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Objective: This pilot study aimed to test the feasibility and short-term impact of a smoking and healthy lifestyle intervention among smokers with a psychotic disorder. Dependent variables were: (i) smoking status; (ii) coronary heart disease (CHD) risk; and (iii) weight.

Method: This was a feasibility study, utilising a pre-post design with no control group (N=43). All participants provided written informed consent and were assessed at pre-treatment and again a mean of 19.6 weeks later. The treatment consisted of nine individual one-hour sessions of motivational interviewing and cognitive behaviour therapy plus nicotine replacement therapy (NRT), in addition to treatment as usual. Research assistants who had not been involved in the delivery of the treatment program conducted post-treatment assessments.

Results: At post-treatment 11.6% of the sample had been continuously abstinent from their quit date and 18.6% had been abstinent in the week prior to post-treatment assessment. Significant improvements were also found in CHD risk scores and weight.

Conclusions: A smoking and healthy lifestyle intervention among smokers with psychosis appears to be feasible and effective in the short-term. A randomised controlled trial, replicating and extending these findings is warranted.

This study was funded by the Australian Commonwealth Department of Health and Ageing. GlaxoSmithKline provided NRT for the study.

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POS2-36 A NOVEL METHODOLOGY TO ACCOUNT FOR MISSING DATA IN SMOKING CESSATION TRIALS

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Background: In longitudinal trials, missing data are a consequence of intermittent loss to follow-up or early withdrawal. Data missing due to attrition are apt to be nonignorable. Failure to account for missing data in statistical analyses can result in biased estimates of treatment effects. Objective: To describe a coordinated modeling approach to account for ignorable and nonignorable missing data in smoking cessation trials. Methods: Data were taken from a longitudinal study of nicotine inhalers for smoking cessation. 520 adult smokers were assigned to purchase nicotine inhalers over-the-counter or from a health care provider. Data were collected at baseline and 2, 6, 12, 26, and 52 weeks thereafter. Ordinal probit selection models were fit in the presence of baseline changes in breath carbon monoxide (CO) and average daily cigarette consumption after imputing missing baseline and intermittently missing follow-up data. Estimates derived in multiple imputed data sets were combined to yield a single inference. For comparison, changes in breath CO and cigarette smoking were also compared, using pattern-mixture models (PMMs) and ignorable missing data methods. Results: Time of withdrawal was associated mainly with sociodemographic characteristics including age, educational attainment, and non-white race. Conversely, changes in smoking outcomes were associated with the intervention and addiction-related factors (e.g., perceived self-efficacy, average smoking history). There was no evidence of selection bias when estimating the change in average daily cigarette consumption after intervention. Changes in breath CO appeared to be missing not at random (p=0.08). OPSSMs and PMMIs yielded generally similar inferences. Conclusions: Researchers should not assume that data missing due to withdrawal in longitudinal trials are ignorable. We describe an approach to account for ignorable and nonignorable missing data that can be implemented using readily available statistical packages.

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POS2-37 ADAPTING A COMPUTERIZED PROVIDER ORDER ENTRY SYSTEM TO PROMOTE THE DELIVERY OF SMOKING CESSATION INTERVENTIONS FOR HOSPITALIZED SMOKERS

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Background: Offering smoking cessation assistance to hospitalized smokers improves quit rates and abstinence rates after discharge but translating this research finding into hospital practice is a challenge. Smokers must be identified before assistance can be offered but this may not occur routinely. We explored whether hospital admission systems designed to expedite hospital admissions, can be adapted to prompt recording of patient smoking status and ordering of nicotine replacement therapy (NRT). A referral for inpatient counseling was automatic for all smokers identified. Prior means of ordering NRT and referrals were unchanged. We compared rates of referrals and NRT orders 12 months before and after the change.

Results: Admissions to the 4 services were stable after the change (31615 vs. 31738). The order sets were used in 43% of admissions after implementation. Smoking status was known in 83% of uses; 20% of patients with known smoking status were coded as non-smokers. The referral rate increased from 6.6% to 10.2% of all admissions and NRT orders increased from 5.2% to 7.0% (both p<.001). After the change, order set use accounted for 42% of referrals and 15% of NRT orders. Referred patients were more likely to be nonsmokers or inappropriate for counseling when the referral was made by order set rather than by other means (15% vs 8%, p<.001).

Conclusion: Physicians were willing and able to identify smokers on admission, but an increase in missing classification was seen. The addition of an easy way to identify and order treatment of inpatient smokers was associated with increased delivery of treatment services. This system change is a model adaptable to many hospitals with CPOE systems across the country.

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PO52-38 TASK PERSISTENCE AS A PREDICTOR OF EARLY SMOKING CESSATION SUCCESS IN LOW-INCOME SMOKERS
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Task persistence describes a tendency to persist on difficult or effortless tasks and may be the behavioral manifestation of distress tolerance. With regards to attempting to quit smoking, it suggests that smokers will be more likely to persist in the face of uncomfortable withdrawal symptoms and/or in response to craving to smoke. This study represents the first to evaluate task persistence in a sample of low-income smokers.

Methods: Low-income smokers (N=67) seeking tobacco dependence treatment in state-funded tobacco cessation clinics completed three measures of task persistence (self-reported persistence, a mirror tracing task, and breath-holding endurance) before their target quit date.

Results: We conducted a 2X2 MANCOVA (abstinence X education level) with motivation to quit and FTND score as covariates and measures of task persistence as dependent variables. We detected a significant interaction effect for abstinence x education (p = .018). Univariate analyses indicated that these effects were due to the significant interaction related to task persistence as measured by the mirror tracing task (F(2, 63) = 5.25, p = .010), but not breath-holding endurance (p = .190) or self-reported persistence (p = .215). Simple effects tests indicated that task persistence prospectively predicted 48-hour abstinence in those with a 12th grade education (p=.001), but not those with 8-11 years of education or less. In effects of abstinence, participants with 12 years of education were significantly more persistent on the mirror tracing task than those abstainers with 8-11 years of education (p=.016).

Conclusions: This study is the first to examine the ability of task persistence to predict early abstinence in low-income smokers. In addition, this study found that level of education can influence the role of task persistence on short-term abstinence even among a sample of low-income smokers. Studying task persistence in low-income smokers may be particularly important because their ability to persist in the face of tobacco abstinence-related discomfort may already be taxied by the stresses associated with their socioeconomic status.

PO52-41 SMOKING CESSATION FOR PERSONS WITH MENTAL ILLNESSES: 12-MONTH TREATMENT OUTCOMES FROM A COMMUNITY BASED SAMPLE
Jeanette A. Wamcosnky, Ph.D.*, Mandy G. Graves May, M.P.H., Chad D. Morris, Ph.D., and Alexa A. Giese, M.D., University of Colorado Denver

Persons with mental illnesses represent approximately 7% of the U.S. population but comprise 44% of the U.S. tobacco market. This population uses tobacco at twice the rate of the general population, suffers excess mortality and morbidity, and faces significant biological, psychological, social, and financial barriers to quitting. Tailoring specific tobacco cessation strategies for persons with mental illnesses is needed. This pilot study compared the effectiveness of two tobacco cessation treatments, use of a quinoline plus nicotine replacement therapy compared to a nicotine augmentation mental health intervention delivered at local community mental health centers. A total of 123 patients were enrolled from four community mental health clinics. Participants were English-speaking adults predominately diagnosed with schizophrenia, bipolar disorder, or major depression.

Participants were randomized to treatment and assessments occurred at baseline, 3, 6, and 12 months. Assessments included self-reported smoking, nicotine dependence, psychiatric and general health symptoms, self efficacy, motivation to quit, and SF-12 health scale. Repeated measures analyses demonstrated a significant increase in mean cigarettes smoked per day for both groups as well as significant proportion of participants demonstrating at least a 50% reduction of tobacco use in both groups. Both groups also had significantly lower rates of tobacco dependence from baseline. There was a significant decrease in depression and psychotic symptoms for both groups, but no significant changes on the SF-12 health scale or the self-efficacy measure. These results have implications for efficacy addressing tobacco for persons with mental illnesses in community mental health systems.

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PO52-42 EXTENDING SMOKING CESSATION RESOURCES TO UNDER-SERVED POPULATIONS THROUGH COMMUNITY WORKSHOPS
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Background and Objectives: Smoking cessation clinics are limited in number and currently serve smokers living in urban centers. In this project, the objectives were two-fold: one, establish partnerships with Public Health Units (PHUs), which are government-funded regional agencies, to increase points of delivery for smoking cessation intervention and, two, measure the impact of free Nicotine Replacement Therapy (NRT) and psycho-education provided through this means of delivery.

Methods: Three smoking-cessation research staff traveled to the various localities to deliver half-day long workshops, wherein smokers completed study-related forms, listened to a brief interactive presentation (20-30 min) on smoking cessation and self-selected one of three types of NRT (patch, gum or inhaler) for 10 weeks. Participating PHUs selected the locations, recruited eligible smokers, and arranged the setting for holding the workshops. All PHUs were invited to participate via an e-mail invitation.

Results: 28 of 36 PHUs accepted the invitation and typically dedicated the equivalent of one full-time staff position for one month prior to the workshop(s) in their region. In 7 months, 114 workshops were delivered in 65 different localities. The workshops were attended by 3959 eligible smokers: on average 48 years old, 57% female, 82% smoked 15 or more cigarettes per day, 49% made a serious quit attempt in the past year. The 7-day point prevalence quit rate among respondents at 6 weeks of treatment was 35% (n=1493). Higher quit rates were observed in those who used “all 10 weeks of NRT” and in those who used “most of it” compared those who used some of it” ORs (95% CI): 6.3 (4.7-8.5) and 2.3 (1.8-3.1), respectively. A lower quit rate was predicted by high heaviness of Smoking Index (OR: 0.4, 95% CI: 0.2-0.6).

Conclusions: Building partnerships with regional organizations can serve as an effective means to deliver effective smoking cessation resources to smokers throughout a geographically large area with minimal staff resources. This model of treatment delivery would be a cost-effective option within a province-, state-, or nation-wide comprehensive tobacco control program.

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POS2-43 ADOLESCENT TOBACCO USE AND SUBSTANCE ABUSE TREATMENT OUTCOMES

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Tobacco use among adolescent substance abusers is a common and concerning public health problem. A limited number of studies have examined the impact of tobacco use on substance abuse treatment outcomes among adolescents. The current review provides a comprehensive exploration of the relationship between cigarette smoking status and 12-month alcohol and marijuana treatment outcomes in a sample of 1,779 adolescents from the Drug Abuse Treatment Outcomes Study for Adolescents (DATOS-A). Participants were classified into 4 groups based on their cigarette smoking status: 1) Persistent Smokers, 2) Non-Smokers, 3) Quitters, and 4) Smoking Initiators. Logistic regression was used to predict likelihood of relapse to alcohol, marijuana, and other drugs after controlling for intake levels and demographic/treatment characteristics. Results indicated significant group differences in the odds of alcohol use at follow-up (c2 = 95.39, p < .001) after controlling for race/ethnicity, treatment modality, and intake levels of use. Persistent Smokers (OR = 1.49, 95% CI = 1.07 – 2.11, p = .02) and Smoking Initiators (OR = 2.19, 95% CI = 1.34 – 3.58, p = .002) were significantly more likely to relapse as compared to Quitters. Similarly, Persistent Smokers (OR = 1.71, 95% CI = 1.24 – 2.37, p = .001) and Smoking Initiators (OR = 3.08, 95% CI = 1.88 – 5.04, p < .001) were significantly more likely to relapse to marijuana as compared to Quitters (c2 = 65.87, p < .001). Smoking Initiators (OR = 2.42, 95% CI = 1.29 – 4.52, p < .006) were significantly more likely to relapse to “other drugs” as compared to Quitters (c2 = 39.02, p < .001). Results indicate that cigarette smoking – either continued smoking or initiation during or after treatment is associated with an increased risk for substance use relapse. Our findings support the implementation of smoking bans or smoking cessation interventions for adolescent substance abusers in treatment.

The data for this study were collected and made available by the U.S. Department of Health and Human Services, National Institute on Drug Abuse, Drug Abuse Treatment Outcome Study: ADOLESCENT (DATOS-A), 1993-1995. Conducted by the Coordinating DATOS Research Center at the National Development and Research Institute (NDRI), North Carolina, and collaborating research centers at Texas Christian University and the University of California, Los Angeles, with data collected by the Research Triangle Institute. 2nd ICPSR ed. Ann Arbor, MI: Inter-University Consortium for Political and Social Research, 2004. This research was supported by grant T32-HL-076134-02 (R. Wing, Ph.D., P.I.) from the National Heart and Lung Institute.

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POS2-44 OVERCOMING BARRIERS TO TEEN SMOKING CESSATION

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Objectives: Cigarette smoking is the single greatest preventable cause of premature mortality and morbidity in the developed world (Ezzati et al., 2002). The majority of adolescent smokers report that they want to quit (Fiore et al., 2008; Stone & Kristeller, 1992; Burt & Peterson, 1998; Stanton, Lowe, & Gillespie, 1996; BZGA, 2006; Heppekusen, 2001). It has been estimated that half of all adolescent smokers will continue to smoke for 16 to 20 years (Pierce & Gilpin 1996). These findings underline the importance of intervention programmes targeted at young smokers. Considerable efforts have been made to develop and implement such interventions. However, programme reach tends to be low. Therefore the objective of the present study is to focus on adolescent smokers’ perception of and attitudes towards cessation programmes and to deduce important information on how to develop and implement future attractive youth-specific interventions.

Methods: A qualitative approach was used to explore the attitudes that young smokers have towards cessation programmes. Three focus groups, each of which consisted of 9-10 students, were conducted with young smokers aged 14-17 years who had been recruited from two schools. After each focus group, participants were asked to complete a post-visit questionnaire and then specifically to reflect on their experiences in the focus groups. Participants were informed that the content of the data would be treated confidentially and anonymously.

Results: All participants reported to think about quitting but most of them were unaware of available professional help and, therefore, were not interested in participating in such programmes. Participants had no concrete idea of the contents and procedure of those programmes, but they suspected a confrontational, judgmental atmosphere within cessation counseling.

Conclusion: Adolescent smokers are prejudiced against cessation programmes. Therefore, they must get more adjusted information about the contents and procedure. One way to achieve this could be the implementation of an information session for motivated young smokers from intake stages. Programmes must be accessible, relevant and tailored to the target group. They should be designed in an attractive, youth-specific way.

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POS2-45 IMPLEMENTATION OF A SMOKING CESSATION INTERVENTION FOR DEPRESSED COLLEGE STUDENT SMOKERS: LESSONS LEARNED AND FUTURE DIRECTIONS

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Address the correlation between depression and cigarette smoking, we designed a combined behavioral counseling and mood management smoking cessation intervention for depressed college students. We describe lessons learned during intervention implementation and baseline data from two participant cohorts (n=16). Participants were mostly White (88%) and male (69%), with a mean age of 19.8 (SD=2.1). On average, participants smoked 26 days/month (SD=7.5, Md=29) and indicated that they were thinking about quitting smoking, but had no definite quit plans. Beck Depression Inventory-II scores revealed mild depressive symptomatology (M=16.3, SD=10.1, Md=13.0). Recruitment was successful and attrition was low (13%). Over half of the participants rated the incentives as “minimally” to “moderately” important for study participation. Participants reported that they enjoyed meeting with a group of student smokers and were motivated to honor their participation commitment. Participants also reported that they enjoyed meeting with a group of student smokers and were motivated to honor their participation commitment. Counselor notes suggested that participants felt relieved to know that other smokers had similar health-related experiences and found camaraderie in defining other people’s negative reactions to their smoking. Given participants’ varied (labeled in quitting and the cant predict to time to first slip during their cognitive-behavioral approaches, counselors found it difficult to assist participants in their movement toward quitting. Group dynamics also appeared to influence motivation. Although participants were unsure that they would succeed, they had set their goal to “low mood” they spoke about smoking for “stress-management”. Additionally, counselor notes suggested that students seemed unwilling to use techniques that took more effort when they had the easy and reliable tool of smoking. Future studies should continue to use the group approach but may need to separate groups and treatment modality by motivation level. In addition, it may be helpful to have more discussion of low mood and how it can prompt people to use less effortful and effective coping strategies.

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POS2-46 THE ROLE OF NICOTINE DEPENDENCE ON SMOKING TREATMENT OUTCOMES


The widely administered Fagerström Test for Nicotine Dependence (FTND; Hagen, Kozlowski, & Heatherton, 1994) has demonstrated excellent predictive validity for nicotine treatment outcomes. The FTND includes items measuring nicotine withdrawal and smoking frequency. In the present investigation, a nicotine dependence scale (NDS) consisting of items assessing additional DSM-IV criteria (spending a great deal of time obtaining nicotine; neglecting important activities due to nicotine use) was constructed using factor analytic methods. Analyses were conducted comparing this measure with the FTND in the prediction of smoking treatment outcomes as part of a larger clinical trial examining the effects of intensive cognitive-behavioral mood treatment (CBMD) and bupropion on smoking cessation. Participants were 524 smokers (52.5% male) randomized to one of four 8-week treatments (standard cognitive behavioral treatment and placebo, standard cognitive behavioral treatment and bupropion, CBMD and placebo, and CBMD and bupropion). In all analyses, the influences of gender, bupropion, and CBMD on smoking outcomes were controlled. Survival analyses revealed that both the FTND (hazard ratio = 1.75) and constructed NDS (hazard ratio = 1.39) significantly predict time to first slip during treatment period, p < .05. Hierarchical multiple regressions were conducted to examine the effects of dependence on withdrawal during quit day, day 3 after quitting, and one week following quit day after controlling for baseline withdrawal. Results revealed that both the FTND and NDS significantly predicted withdrawal at each time point, p < .05. In follow-up analyses both the FTND and NDS were included in the model. When both measures were included, the FTND predicted quit day withdrawal, but the NDS predicted Day 3-Week 1 withdrawal, but the FTND did not, p < .05. Results are discussed and the predictive validity of individual items from both measures is examined.

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SRN T • Poster Session 2
POS 47

RESULTS OF A SPANISH SMOKING CESSATION CLINIC


Objective: The main objective of this report is to present the results (efficacy and pharmaceutical expenditure) of a Spanish Smoking Cessation Clinic.

Description: The Smoking Cessation Clinic (SCC) is located in Madrid and belonged to the Public Health Service. The staff is formed by 3 doctors, 2 nurses and 1 psychologist. GPs or other Health Professionals refers smokers to the SCC. Smokers attending the Clinic receive free psychological and pharmaceutical treatments in order to help them to quit. They are followed up for 1 year.

Results: We present data from years 2006, 2007 and 2008. In year 2006 we treated 760 (50% male), mean age of 48±11 years. Their mean FTND-score was 6.8±1.6. 36% of them received NRT, 18% Bupropion, 26% varenicline and 3% received only psychological treatment. During the first 6 months of 2006, we treated 762 smokers (52% female), mean age 45±13 years. Their mean FTND-score was 6±1.35% of them received NRT, 18% Bupropion, 44% varenicline and 3% received only psychological treatment.

Prolonged abstinence at 12 and 24 months follow up for 2006 smokers’ group was 44%, and 41%, respectively. Prolonged abstinence at 12 months followup for 2007 smokers’ group was 42%, and 35%, respectively. Total cost of the treatments for years 2006 and 2007 were 95,425 Euros and 120,827 Euros respectively.

Conclusions: Smokers who attend a SCC have high smoking cessation rates at one and two years follow up. Low cost of pharmaceutical treatment for smoking cessation.

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POS 48

IS IMPLEMENTATION OF THE 5 A’S OF SMOKING CESSATION AT COMMUNITY MENTAL HEALTH CENTERS EFFECTIVE FOR REDUCTION OF SMOKING BY PATIENTS WITH SERIOUS MENTAL ILLNESS?

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The “5 A’s” physician guidelines of smoking cessation require that physicians address patients about their smoking with five steps: Ask, Advise, Assess, Assist and Arrange. A 2008 AHRQ report emphasizes the need for research examining the effectiveness of tobacco dependence interventions in patients with psychiatric comorbidity. However, the 5 A’s have not been tested in this population. We studied whether implementing the 5 A’s at 5 six community mental health centers reduces smoking among persons with serious mental illness. The six outpatient centers were roughly matched on size, urbanicity, and percentage of patients that were African-American. Two of the clinics were in urban areas, two were in rural regions and two were in suburban areas. Within each clinic pair, one was randomly assigned to an immediate condition and the other to a delayed condition. Participating physicians were trained on the “5 A’s” guidelines and were instructed to address these steps with each patient. The sample consisted of cigarette smokers with serious mental illness. Overall, the sample was well balanced with respect to gender and race, and had a mean age of 44.3±9.0 years. Participants from the “immediate” implementation condition were evaluated six monthsprior to the implementation of the 5 A’s (pre-baseline), just before the 5 A’s implementation and after 6 months of the 5 A’s after implementation (N=148) were evaluated six months prior to the implementation of the 5 A’s (pre-baseline), just before the 5 A’s implementation and after 6 months of the 5 A’s. Results indicate no significant group by time effect of the 5 A’s after 6 months of exposure to smoking variables, including smoking in the last 7 days, number of cigarettes smoked per week and carbon monoxide hemoglobin levels. However these same outcomes were significantly improved at the 12 month follow up, when compared to pre-intervention levels. Our study finds modest support for implementing the 5 A’s at community mental health centers to promote abstinence and smoking reduction among smokers with serious mental illness. While these results are promising, more effective strategies need to be developed and tested.

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POS 49

MOTIVATIONAL INTERVIEWING EFFICACY FOR SMOKING CESSATION: A META-ANALYSIS

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Motivational Interviewing (MI; Miller & Rollnick, 2002) is a popular and efficacious intervention for substance disorders and other behavioral health problems. Prior reviews and meta-analyses of MI have included very few smoking cessation trials. The aims of the current meta-analysis were to determine the efficacy of MI for smoking cessation and identify potential correlates of treatment effects. MEDLINE/PubMed, PsycINFO, and other sources including unpublished works were searched. Title/abstract search terms were “motivational interview” OR “motivational enhancement” AND “smoke”, “cigarette”, “tobacco”, “OR nicotine”. Randomized trials that reported the number of smokers who were abstinent at follow up were eligible. We estimated the overall effect of MI using a logistic model with a random intercept to account for study-level effects. Thirty-five published trials were identified since 1998: 10 general adults, 9 chronically ill adults, 8 adolescents, and 8 pregnant/postpartum women. Analysis of the trials (8,420 individual participants) showed an overall odds ratio comparing likelihood of abstinence in the MI versus control condition of 1.15 (p < 0.015). Participants were less likely to be biologically confirmed as abstinent when self-report time-periods referred to continuous rather than point prevalent abstinence. Treatment-seeking participants were more likely to quit than non-treatment seekers. Other potential correlates of treatment effects such as population, treatment duration, and smoking severity were discussed. We also used a funnel plot and regression analysis to assess publication bias. This is the most comprehensive review of MI for smoking cessation conducted to date. There was no evidence of methodological publish bias in the study. There was no evidence of trial reporting detail. The intervention effect was significant but low. These findings suggest that current MI smoking cessation approaches should be tested head-to-head against other behavioral approaches and that they may need to be enhanced or greater efficacy.

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POS 50

APPEALING TO SMOKERS WHO PROCRISTINATE ABOUT QUITTING

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Although most smokers say they are interested in quitting, only a minority makes a quit attempt in any given year. Even among those who attempt to quit, medications such as nicotine replacement therapy (NRT), which have been shown to increase quitting success, are under-utilized; most quit attempts are assisted. Thus, a public health goal is to get more reluctant smokers to attempt quitting using evidence-based methods. In this study, we characterized smokers according to their readiness to quit, and assessed interest in existing and new NRT medications in these subgroups of smokers. A survey was conducted in France among 1,028 adult (18+) smokers from a national research panel; data were weighted to represent the French population. Based on current smoking behavior and attitudes, nicotine dependence, and quitting history and attitudes, respondents were clustered using latent class analysis to identify subgroups of smokers. The analysis identified significant proportions of smokers (34% of all smokers) who were not interested in quitting, but two thirds of smokers fell into one of three clusters with significant interest in quitting. However, almost half of those interested in quitting (40%) were Procrastinators (26% of all smokers), who, although they expressed interest in quitting, did not have a specific time horizon for quitting (in contrast to the other subgroups). This group appeared to be an important target for messages about smoking cessation and use of evidence-based treatment. Most Procrastinators (81%) had tried quitting before, but, compared to other smokers interested in quitting, were only half as likely to have used medication, about twice as likely to say they would rely just on willpower when they did try to quit, and less interested in using currently-available NRT medications. However, Procrastinators showed significantly increased interest in a novel NRT form comprised of a small, fast-dissolving lozenge offering rapid craving relief. These data suggest that appropriate novel NRT products may help generate successful medication-assisted quit attempts in this large group of recalcitrant smokers.

This study was sponsored by GlaxoSmithKline Consumer Healthcare, which markets NRT products. This work is supported by National Institutes of Health 2K07CA108685 and 1CA006927 (S. Shiffman, Principal Investigator) and by a new smoking cessation product.

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**POS2-51**

**HOW TOBACCO TREATMENT IS CURRENTLY DELIVERED IN DRUG TREATMENT SETTINGS**

Kimber P. Richter*, Ana Paula Cupertino, Susan Garrett, Jamie Hunt, Peter D. Friedmann, Byron Gajewski, and Edward F. Ellerbeck

Background: Some U.S. drug treatment facilities are beginning to treat tobacco, but the prevalence and quality of services is unknown. Rich descriptions of current practices would be useful in facilitating quality improvement and developing valid measures of tobacco services.

Methods: We conducted cross-sectional, mixed-method assessments in 8 facilities among 8 directors, 25 staff, 29 clients, and 72 chart clients. The purposive sample was stratified by ownership, size, drug treatment mode, and self-reported level of tobacco services. Measures included systems assessment, chart reviews, pharmacy environment assessment, collecting written policies, and semi-structured interviews.

Results: Most facilities (5) were non-profit, 4 had fewer than 10 full/part-time staff, 2 provided methadone, and 3 facilities reported they provided moderate-intensive tobacco treatment. In the self-reported systems assessment, 6 directors reported they documented smoking status in the clinic record, 4 facilities had protocols for treating tobacco, 5 prescribed or recommended quit smoking medications, 4 had a system for following up, and treatment outcomes. No charts had any entries related to tobacco dependence/treatment in the 30 days prior to review. Interviews revealed that directors, staff, and clients often differed in their perspectives on the type and amount of tobacco treatment offered.

Discussion: Director reports differed from chart reviews and staff/client reports. A valid scale will assess practices and collect evidence of implementation. We will provide details on services, present our preliminary scale, and invite audience input.

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**POS2-52**

**COUNSELING EFFECTS ON REACTIONS TO LAPSES DURING A SMOKING CESSATION ATTEMPT**

Danielle E. McCarthy, Ph.D.*, Michael C. Fiore, M.D., M.P.H.*, and Timothy B. Baker, Ph.D.* 1Rutgers, The State University of New Jersey; 2University of Wisconsin School of Medicine and Public Health

Data from a large scale clinical trial of bupropion SR and individual counseling were used to test effects of counseling on reactions to lapses and the relation between lapse reactions and subsequent smoking status. The current study examined whether a cognitive and behavioral treatment designed to promote resilience in the face of lapses achieved the desired effects. Data regarding slips were collected in real time during the first four weeks of a quit attempt. Multilevel modeling results indicated that eight 10-minute sessions of counseling were not associated with improved reactions to initial lapses or resilience over the course of multiple lapses. No significant differences between counseling conditions were noted for collected in real-time during the first four weeksofaquitattempt.Multilevelmodeling results indicated that eight 10-minute sessions of counseling were not associated with improved reactions to initial lapses or resilience over the course of multiple lapses. No significant differences between counseling conditions were noted for.

Results: No significant differences between counseling conditions were noted for the degree of guilt experienced, confidence in one's ability to quit smoking, or feeling like giving up following a lapse. Those in the counseling condition were only marginally more likely to report planning to avoid future lapses than were those in the no counseling control condition, and were no more likely to report planning to use behavioral or cognitive strategies to prevent lapses than were those in the control condition. Results provided limited support for the importance of reactions to lapses in achieving subsequent abstinence. Perceived ability to quit and feeling like giving up following lapses were not related to biochemically confirmed seven-day point-prevalence abstinence at the end of treatment. Guilt following early lapses was similarly unrelated to later abstinence, but those whose lapse-related guilt levels fell over subsequent lapses were significantly more likely to be abstinent at the end of treatment than were those who guilt did not decline. Planning to avoid future lapses did not predict subsequent abstinence. Results from this study added to the literature challenging the predictive value of abstinence violation reactions in terms of successful change efforts. Results also suggest that brief counseling like that offered in this study may not help people achieve abstinence following a lapse event.

This study was conducted while the first author was at the University of Wisconsin-Madison. Supported by Transdisciplinary Tobacco Use Research Center grant#R01DA038207 (NIDA) and the National Cancer Institute.

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**POS2-53**

**EARLY HEALTH CONSEQUENCES OF SMOKING AMONG TREATMENT-SEEKING AFRICAN-AMERICANS: RELATIONSHIPS WITH PSYCHOSOCIAL FACTORS**

Monica S. Webb, Ph.D.*, and Michael P. Carey, Ph.D., Department of Psychology and Center for Health and Behavior, Syracuse University

African-Americans suffer disproportionately from the long-term health effects of smoking. Although the greater incidence and prevalence of smoking-related diseases in this population are well documented, there are few data concerning the short-term health consequences of smoking among African-Americans. Public health efforts to reduce long-term disease should attend to the early health consequences of smoking because these are often precursors to more serious pathology; it addition, early symptoms may serve as “cues to action,” motivating smoking cessation. Even less is known about the effects of psychosocial factors on smoking-related symptoms. The biopsychosocial model provides a framework for examining relationships among physical symptoms, psychosocial factors, and alcohol use. This study investigated the prevalence and psychosocial correlates of smoking-related physical symptoms in treatment-seeking African-American smokers. We hypothesized that smoking-related symptoms would be positively associated with perceived stress, depressive symptoms, and alcohol use. It was also expected that smoking-related symptoms would be related to smoking history (i.e., daily smoking and smoking duration). Adult smokers (N=117, 58% female, M=43.0 years) who smoked at least five cigarettes per day completed self-administered assessments of smoking history, alcohol use, perceived stress, depressive symptoms and smoking-related symptoms. Results indicated that the most frequently occurring physical symptoms were shortness of breath (66%), coughing (50%), and headaches (49%). Multivariate analyses showed that smoking history, alcohol use, perceived stress, and depressive symptoms were independently related to smoking-related symptoms, even after controlling for sociodemographic variables and medical diagnoses. In conclusion, the early health consequences of smoking appear to be common among African-American smokers, and can serve as a cue to action for cessation efforts. Alcohol use, stress, and depression appear to exacerbate early health consequences of smoking, and should be routinely assessed in treatment-seeking African American smokers.

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**POS2-54**

**ACCEPTABILITY AND FEASIBILITY OF INITIATING A STAGE-TAILORED TOBACCO TREATMENT INTERVENTION IN A PSYCHIATRY INPATIENT SETTING**

Judith J. Prochaska, Ph.D., M.P.H.*, Stephen E. Hall, M.D., and Sharon M. Hall, Ph.D., University of California, San Francisco

Persons with mental illness face serious tobacco-related consequences. Smoking is a three-way problem, providing tobacco, nicotine, and mental illness. The intervention combines a computer-delivered, stage-tailored expert system intervention; a stage-based manual; a brief individual counseling session; and nicotine patch. Two hundred participants have been recruited to date. The sample represents a range of psychiatric diagnoses, with major groups being unipolar depression (48%), bipolar depression (29%), and schizophrenia spectrum disorders (15%); 71% have a co-occurring substance use disorder in addition to nicotine. Participants averaged 18.7 (SD=12.9) cigarettes per day prior to hospitalization with a moderate level of nicotine dependence (FTND: M=4.7, SD=2.6). Only 15% reported intention to quit smoking in the next 30 days. In initial usability testing, participants rated the intervention’s approach, content, organization, and utility highly. The high rates of study recruitment (81%) and retention (>80% at 12 and 18 months follow-up) support the feasibility of initiating tobacco treatment services in institutional psychiatry. Among intervention participants, 97% completed the computer and counseling sessions during their acute stay, and 46% have accessed nicotine replacement from the study for use after hospitalization. Efficacy outcomes at 18 months follow-up are still being collected. Ultimately, this research could lead to a model smoking cessation intervention for smokers with severe mental illness.

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**SRNT • Poster Session 2**
**POS2-55 DIFFERENCES IN PREDICTORS OF EARLY VERSUS LATE ABSTINENCE WITHIN A 24-MONTH TREATMENT PROGRAM**

Lisa Sanderson Cox, Ph.D.,*1 Niaman Nazir, M.B.B.S., M.P.H.,1 Jonathan D. Mahnken, Ph.D.,*1 Laura M. Massumian, M.A., M.P.H.1 Edward F. Ellerbeck, M.D., M.P.H.,1 and Jasiit S. Athlwalla, M.D., M.P.H., M.S.1 *1University of Kansas School of Medicine; 1University of Minnesota

Nicotine dependence can be characterized as a chronic disease commonly involving cycles of repeated quit attempts and smoking relapse, yet most clinical trials involve short-term interventions. Subsequently, evaluating predictors of abstinence have been limited to 6 to 12 month outcomes. KAN-QUIT enrolled and randomized 750 rural smokers across all stages of readiness to stop smoking. Participants received pharmacotherapy management alone or combined with disease management including counseling and provider feedback every six months over two years. In this study we examined differences in predictors of abstinence following initial (6-month) and extended (24-month) intervention. Baseline variables were analyzed as potential predictors of self-reported smoking abstinence at month 6 and at month 24. Chi-Square tests, two-sample t tests, and multiple logistic regression analyses were used to identify predictors of abstinence among 592 participants who completed the baseline assessment and month 6 and 24. Controlling for treatment group, the final regression models showed male gender, baseline preparation stage of change (thinking about quitting in the next 30 days), and lower levels of nicotine dependence were associated with a significantly higher probability of being abstinent at both 6 and 24 months. While increased controlled motivation at baseline and receipt of pharmacotherapy predicted early abstinence at 6-months, these factors did not predict later abstinence. In contrast, baseline contemplation stage of change (thinking about quitting in the next 6 months) emerged as a significant predictor of abstinence at 24 months. Female gender and higher nicotine dependence reflect increased risk for continued smoking in the context of both initial and extended intervention. In studies looking at smokers across all stages of readiness to stop smoking, it may take persistent, repeated intervention to move contemplators to abstinence.

This research was conducted at the University of Kansas School of Medicine with support from the NIH (R01 CA101963).

**POS2-56 TOBACCO CESSION VIA DOCTORS OF CHIROPRACTIC**

Judith S. Gordon, Ph.D., and Joseph A. Istan, Ph.D.

Introduction: Allopathic health care practitioners have been shown to be effective in helping their patients quit tobacco. However, Doctors of Chiropractic (DCs) have not been utilized in this role. DCs frequently see patients with chronic pain, which is associated with tobacco use. The chiropractic team provides educational and preventive services to patients of change and the clinic visit can provide an enhanced opportunity to talk to patients about their tobacco use.

Study Purpose: The specific aims of this study were to: 1) design and refine an established office-based tobacco intervention for use within chiropractic settings; and 2) develop and refine study implementation protocols, DC and patient recruitment procedures, data collection strategies, and follow-up procedures through an iterative process of engagement with participating chiropractic practitioners, staff and patients.

Methods: We adapted the intervention protocol, DC training format and materials, and patient materials through the use of focus groups, interviews, and written surveys with 50 DCs and allied staff from 20 clinics in Oregon. We assessed patient outcomes at 6 weeks, and 6 and 12 months post-enrollment.

Results: We recruited 202 patients, the majority of whom were: White (88%); female (55%); had an income <$35,000 (56%). We estimated a tobacco use prevalence rate of only 7% among participating chiropractic patients. Missing data, 8.6% of patients reported 7-day abstinence at 6 weeks, and 10.1% at the 6-month follow up (12-month data will also be reported).

Conclusions: Doctors of Chiropractic were eager to participate in the study, and enthusiastic about the intervention protocol and materials. The study was feasible, although completion was challenging due to the low prevalence of tobacco use and the repeated visits made by individual patients. Absolute cessation rates were comparable to other health care-based interventions.

This study was funded by a grant from the National Institute on Drug Abuse R21 DA021349.

**POS2-57 SMOKING CESSATION AND U.S. HISPANICS: A MINI-META ANALYSIS OF RANDOMIZED CONTROLLED TRIALS**

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Hispanics smokers living in the U.S. have been underrepresented in smoking cessation research. However, the leading causes of death among Hispanics are smoking-related, including cardiovascular disease, stroke, and lung cancer. Although previous reviews have highlighted smoking cessation interventions (SCIs) conducted among Hispanic smokers, none have focused solely on this population of smokers or quantitatively estimated their efficacy. Given the small number of studies in this area, the review was a “mini-meta analysis”. The overarching goal of this analysis was to provide a more precise evaluation of the literature. The main objectives of this review were: (1) to evaluate the evidence for end-of-treatment (EOT) efficacy of SCIs compared with control conditions (e.g., placebo or minimal controls); (2) to examine evidence of longer-term efficacy; and (3) to investigate the type of intervention as an a priori moderator variable. Given the small number of studies, the nature of the intervention and the assessment of outcomes varied from baseline to month 6 and 24. Results: A total of 10 SCI studies were identified through computerized bibliographic databases (PsychINFO, PsycARTICLES, PsyFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSCO Host, PsycFirst, MEDLINE, ProQuest, EBSC
There are no efficacious interventions for doing so. The purpose of the present trial was to examine the efficacy of voucher-based contingency management for preventing relapse among spontaneous quitters. This intervention is efficacious for increasing cessation among pregnant smokers. Participants were 75 spontaneous quitters recruited from local obstetrical clinics. They were randomly assigned to an experimental condition (n = 37) where vouchers exchangeable for retail items were delivered contingent on abstinence or a control condition (n = 38) wherein vouchers were delivered independent of smoking status. Smoking status was verified via urine-cotinine testing. Vouchers could be earned once monthly antepartum and once-twice weekly through 12 weeks postpartum at which time the voucher program ended. Formal assessments of smoking status were conducted at study intake, twice more antepartum and 5 times postpartum (weeks 2, 4, 8, 12, and 24). There was a significant effect of treatment (p < .01) and time (p < .001), but no interaction in a repeated-measures analysis of 7-day point-prevalence abstinence across assessments while the voucher program was in effect. Abstinence levels ranged from 70-100% in the experimental condition and 56-82% in the control condition during that time, with levels being 5-18% greater in the experimental than control condition across each assessment. Abstinence at the 24-week postpartum assessment conducted after the voucher program terminated did not differ significantly between conditions, with 53% and 56% of participants in the experimental and control conditions meeting the criterion, respectively. Results are promising, but strategies to continue treatment gains following termination of the voucher program are needed.

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Aims: The efficacy of varenicline (VAR) for smoking cessation has been demonstrated in several clinical trials, which were conducted in the USA and Europe among predominantly Caucasian populations. This pooled analysis evaluates VAR versus placebo (PLA) in Asian populations.

Methods: Data were pooled from 3 randomized, double-blind, placebo-controlled, multicentre, Phase IIb or III trials conducted in Japan (n=618); Taiwan and Korea (n=250); and China, Singapore and Thailand (n=333). Subjects received either 1 mg BID VAR or PLA for 12 weeks followed by 12 weeks of follow-up (≥14 weeks follow up in Japan). The primary endpoint was the carbon monoxide-confirmed continuous abstinence rate (CAR) for Weeks 9-12 (the last 4 weeks of treatment) and a key secondary endpoint was CAR from Weeks 9-24. Subjects were aged 18-75 years and smoked >10 cigarettes per day.

Results: A total of 893 subjects (447 VAR; 446 PLA) were included in this analysis. Subject demographics were similar between treatment groups (age [years]; 39.3 VAR, 39.6 PLA; sex: 87% VAR, 89% PLA; mean body mass index [kg/m2]; 23.8 VAR, 24.0 PLA; mean Fagerström Test of Nicotine Dependence score: 5.24 VAR, 5.35 PLA; mean cigarettes per day: 22.3 VAR, 22.2 PLA). Complete abstinence from smoking during last 4 weeks of treatment (CAR Weeks 9-12) was achieved by 58.6% for VAR versus 34.3% for PLA (odds ratio [OR]: 2.77; 95% confidence interval [CI]: 2.10, 3.65; P<0.0001) and was maintained through 12 weeks of follow-up (CAR Weeks 9-24) by 41.4% with VAR and 25.3% with PLA (OR: 2.10; 95% CI: 1.57, 2.79; P<0.0001). The most frequent adverse events in the VAR group (occurring more than in the placebo group) were: nausea (31.5%), headache (8.5%), dizziness (7.8%), insomnia (7.4%), and upper abdominal pain (5.4%). Serious adverse events occurred in 4 VAR subjects and 5 PLA subjects. Discontinuations due to adverse events occurred in 3.6% of VAR subjects and 1.6% of PLA subjects.

Conclusion: Varenicline significantly improves abstinence from smoking versus placebo during the last 4 weeks of treatment and through a further 12 weeks of follow-up in this pooled analysis of subjects from 6 countries in Asia. The clinical trials were sponsored and funded by Pfizer Inc.

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Cigarette smoking causes premature death, disability and reduced health-related quality of life (HRQOL). Smoking abstinence reverses many adverse health effects of smoking and may improve HRQOL. We assessed the effects of treatment of intervention and smoking abstinence on the HRQOL in a 52-week, randomized, placebo-controlled trial of varenicline and bupropion sustained release (SR). Subjects who smoked ≥10 cigarettes per day for the past year were randomly assigned to receive varenicline 1 mg twice daily (N=696), bupropion SR 150 mg twice daily (N=671) or placebo (N=685) for 12 weeks and followed post therapy for an additional 40 weeks. The HRQOL was assessed using the Smoking Cessation Quality of Life questionnaire (ScQOL; SF-36 health survey plus 5 smoking cessation scales) at baseline and weeks 12, 24 and 52. Health transition (perceived health compared to 1 year ago) was significantly better among subjects receiving varenicline and bupropion SR compared with placebo at weeks 12, 24 and 52 (mean change from baseline); at the same time points varenicline-treated subjects had significantly improved health transition compared with subjects who received bupropion SR. Similarly, self-control of smoking behavior was significantly improved in subjects receiving varenicline and bupropion SR compared with placebo at weeks 12, 24 and 52; varenicline-treated subjects showed significantly improved self-control compared with subjects on bupropion SR at weeks 12, 24 and 24. There was a graded and significantly positive association between length of continuous abstinence and improved health transition, vitality, self-control, anxiety, and overall mental profile (subjects were determined to be continuously abstinence for < 4 weeks, ≥4 weeks to 15 weeks, 16-43 weeks or 44 weeks or more). Treatment with varenicline and bupropion SR for smoking cessation resulted in improved perceived health status and self-control measured by the ScQOL. Improved perceived health status, vitality and self-control were all significantly associated with continuous smoking abstinence.

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PO52-06 | COST ANALYSIS OF RECRUITMENT STRATEGIES

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Developing effective and efficient recruitment methods increases adequate representation of minorities in research studies. Kick It at Swope III (KIS III) is a double-blind, placebo-controlled, randomized trial of adult African American (AA) light smokers (≥10 cigarettes/day). As of June 2008, 568 smokers have been screened for eligibility, 315 were eligible, and 161 were randomized into the study. Recruitment efforts have focused on community outreach, radio advertising, clinic recruitment, local newspaper advertising, and direct mailings from physicians. We conducted a cost analysis of recruitment methods based on self-report data from respondents asking them to report how they first heard about the study. Word of mouth produced 16% of study participants (25/161 randomized). Overall, 53% of those randomized reported hearing about the study by radio, with an overall cost of $135 per person randomized ($144,850 randomized). The most cost-efficient methods of recruitment were community outreach through flyers/posters, which resulted in a cost of $46 per person randomized ($1663/36 randomized), direct mailings from patients’ physicians at $89 ($124,014 randomized). Even though advertisement information was the same across all forms of recruitment, radio respondents were more likely to be eligible (67% eligible) than those responding due to word of mouth (56%), letters (44%), and flyers (43%). Total expenditures for recruitments efforts were $134,955. The cost per person screened was $25, per person eligible was $46, and per person randomized was $89.

Recruitment of ethnic minorities into clinical trials is possible through a mix of targeted, traditional, and innovative strategies. This study suggests significant cost-effective delivery of a multitude of strategies to be important to maximize response and minimize cost.

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PO52-07 | PHARMACIST ADVICE FOR SMOKING CESSATION: DOES PHARMACIST GENDER MATTER?

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Objectives: We examined predictors of smoking outcomes among pharmacy clients enrolled in a technology-assisted cessation program that included pharmacist counseling.

Methods: Participants (n=200) enrolled at pharmacies and were assigned to either: individualized feedback with pharmacist advice (IN), or IN plus 8 weeks nicotine patch (IN+). After completing assessments, all participants were given a printed report containing individualized feedback and quitting advice plus a companion Pharmacist Report to guide the brief, in-pharmacy cessation counseling. Pharmacists also made brief counseling calls to all clients on their target quit day (TQD). The primary outcome was cotinine verified 7-day point-prevalence abstinence at 6 months.

Results: The sample was 59% female and 53% Hispanic. Average age was 44.8 years (SD=11.4). Participants smoked an average of 16.6 cigarettes per day (SD=9.7). Over half of all participants (64.9%) set a TQD. Six pharmacists (50% female) participated in the study. There was no correlation between pharmacist and client gender. At 1-month follow up, 85% of IN+ and 6% of IN participants were using the patch. 67% of TQD phone calls were completed (no difference in completion rate by pharmacist gender). Results of logistic regression analyses showed that pharmacy clients were significantly more likely to be quit at 6 months if they had set a TQD (OR=4.1; 1.9-8.9) were counseled by a female pharmacist (OR=1.49; 1.05-2.55) and were less nicotine dependent at baseline (OR=1.2; 1.1-1.7). Smokers were more likely to set a TQD if the pharmacist counseling them was female (OR=1.4; 1.1-1.9), and if they were in the IN+ group versus the IN group (OR=3.5; 2.6-4.7). Subsequent analyses showed that on average, male pharmacists had counseled more smokers than female pharmacists (49.1, SD=4.6 vs. 18.6 SD=4.2; p<0.001). Participants were more likely to set a TQD if the pharmacist provided them with an individualized Pharmeracist Report (OR=1.9; 1.2-3.1). Smokers were more likely to quit if the pharmacist provided them with a printed report containing individualized feedback and quitting advice plus a companion Pharmacist Report to guide the brief, in-pharmacy cessation counseling. Participants were more likely to set a TQD if the pharmacist provided them with a printed report containing individualized feedback and quitting advice plus a companion Pharmacist Report to guide the brief, in-pharmacy cessation counseling. Participants were more likely to set a TQD if the pharmacist provided them with a printed report containing individualized feedback and quitting advice plus a companion Pharmacist Report to guide the brief, in-pharmacy cessation counseling.

Conclusions: Smokers given free access to the nicotine patch and who were counseled by a female pharmacist were more likely to be quit at 6 months. Women were more likely to quit if the pharmacist counseling them was female (OR=1.49; 1.05-2.55) and were less nicotine dependent at baseline (OR=1.2; 1.1-1.7). Smokers were more likely to set a TQD if the pharmacist counseling them was female (OR=1.4; 1.1-1.9), and if they were in the IN+ group versus the IN group (OR=3.5; 2.6-4.7). Subsequent analyses showed that on average, male pharmacists had counseled more smokers than female pharmacists (49.1, SD=4.6 vs. 18.6 SD=4.2; p<0.001). Participants were more likely to set a TQD if the pharmacist provided them with an individualized Pharmeracist Report (OR=1.9; 1.2-3.1). Smokers were more likely to quit if the pharmacist provided them with a printed report containing individualized feedback and quitting advice plus a companion Pharmacist Report to guide the brief, in-pharmacy cessation counseling. Participants were more likely to set a TQD if the pharmacist provided them with a printed report containing individualized feedback and quitting advice plus a companion Pharmacist Report to guide the brief, in-pharmacy cessation counseling.
The STOP Study: Predictors of Quitting Success Among Smokers Participating in a Community Pharmacy Intervention with Free NRT

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Purpose: The STOP (Stop Smoking Therapy for Ontario Patients) Study is evaluating several models for distributing free Nicotine Replacement Therapy (NRT) along with various levels of behavioral counseling. The objective of this study was to evaluate the effectiveness of 2 levels of smoking cessation support provided by community pharmacists in conjunction with nicotine replacement therapy (NRT). The purpose of this analysis was to examine predictors of quitting at end-of-treatment and 6-months.

Methods: This study was an open, randomized trial comparing two levels of counseling provided by community pharmacists. Eligible smokers enrolling using an online assessment tool were randomized to either 3 brief counseling sessions (Group A) or 1 brief session (Group B) and received up to 5-weeks of NRT. Follow up occurred at 5 weeks and 6 months post-treatment.

Results: 98 pharmacies across Ontario participated in the study. 7274 smokers (54.7% females) visited a pharmacy to participate (Group A = 3720, Group B =3554). There were no significant baseline differences between groups; on average, participants were the impact of feedback on smoking abstinence. The results of this study have focused on the content of such interventions. Some authors point out that especially women could benefit from a more supportive and client-centered than a directive counseling smoking-specific approach. Aim of the present study was to evaluate the effectiveness of two different counseling approaches in a telephone aftercare for female (ex-)smokers.

Method: A randomized control group design with three study conditions was realized. The sample consisted of 527 female smokers that participated in a SCP (3 group sessions) during an inpatient rehabilitation for mothers and their children. After the SCP participants were randomly assigned to: (1) no further aftercare (control group); (2) a directive, smoking-specific telephone aftercare; or (3) a non-directive, supportive telephone aftercare. Aftercare comprised three proactive calls during a period of 6 months after the rehabilitation stay. Smoking status of participants was assessed at the end of the program as well as six and twelve months afterwards. The evaluation of the results was effected through weighted GEE analyses.

Results: Against the original hypothesis, the directive telephone aftercare was better accepted by the women than the non-directive counseling approach. In the twelve-month follow-up compared to the control group the directive counseling group showed a significantly higher abstinence rate (24.8% vs. 16.0%; OR: 2.0; CI: 1.0-3.8) compared to a non-directive counseling approach. Telephone aftercare probably provided a high degree of goal orientation as well as sufficient social support to effectively prevent relapse. The results suggest the effectiveness of a short SCP during inpatient rehabilitation followed by telephone aftercare.
POS2-70
PREDICTORS OF POST-TREATMENT RELAPSE TO SMOKE IN SUCCESSFUL QUITTERS: POOLED DATA FROM TWO PHASE III VARENICLINE TRIALS
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Identifying predictors of smoking relapse helps to elucidate the challenges of long-term smoking cessation and provides direction for improved treatment development. In this secondary data analysis, we examined predictors of relapse from end-of-treatment (week 13) through 1-year follow-up (week 52) for participants who completed the active treatment endpoint of 4-week continuous abstinence weeks 9 through 12 (i.e., treatment responders) during two phase III varenicline trials (Gonzalez et al., 2006; Jorenby et al., 2006). Of the 626 smokers classified as treatment responders during the two trials, 301 (48%) relapsed during the follow-up phase (weeks 13-52) of the studies. Logistic regression and survival analyses were conducted to examine predictors of relapse. Potential individual-level predictors included demographics, smoking history, alcohol use, and exposure to other smokers. Treatment-level variables included medication group assignment, length of continuous abstinence during the treatment phase of the trials, and having a history of smoking problems.

Results indicated that length of continuous abstinence during the treatment phase of the study and longest period of abstinence in the past year were the only two significant predictors of relapse. The odds of relapsing were almost 5 times greater (OR=4.95; 95% CI=1.13-20.6; p=0.01) for participants who were unable to initiate continuous abstinence until the final 4 weeks of the treatment period compared with those who initiated continuous abstinence on or before their quit date. Participants who had one or more days of abstinence during the past year were significantly more likely to relapse than those who reported 0 days of abstinence (OR=1.56; 95% CI=1.13-2.16; p=0.008). These findings suggest that the ability to quit smoking on the initial date and sustain the abstinence through the treatment period is a good prognostic indicator for long-term abstinence. The relationship between post-treatment relapse and longer pre-treatment periods of abstinence is counterintuitive yet not without precedence in the literature.

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POS2-71
EFFICACY OF DISTRESS TOLERANCE TREATMENT VS. STANDARD BEHAVIORAL TREATMENT FOR EARLY LAPSE SMOKERS
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Inability to tolerate the distress of nicotine withdrawal and negative affect is a key factor in smoking relapse. Early lapse smokers, with a quit history characterized by one or more days of attempts beyond the initial quit date, represent a group who benefit from specialized smoking cessation treatment to address their unique needs. The purpose of this investigation was to evaluate the efficacy of a specialized distress tolerance treatment for early lapse smokers in comparison to a standard smoking cessation treatment. This RCT compared an integrative, distress tolerance (DT) treatment for early lapse smokers, incorporating behavioral exposure to nicotine withdrawal and training in Acceptance and Commitment Therapy (ACT) vs. standard smoking cessation (ST) treatment [with both conditions receiving 8 weeks of transdermal nicotine patch (TNP)]. At the completion of behavioral treatment (4 weeks post-quit), DT participants (n = 27) were 3.6 times more likely to be abstinent (p < 0.05) than ST (n = 22) participants (66% vs. 40.9%; AOR=3.60; 95% CI = 1.01 -12.89). At 8 weeks post-quit, the odds of abstinence were still 2.44 times greater in favor of DT, however this difference was nonsignificant, as there were 13 relapses at 13 weeks, allowing for the conclusion that DT would lead to increased behavioral persistence, we examined rates of recovery from initial lapses. Of those who lapsed to smoking during the first week after quit date (46.9%), DT participants were 4 times more likely (OR = 4.00) than ST participants to be abstinent at the end of behavioral treatment (4 weeks post-quit). We also present data on changes in mood and craving after quitting that are consistent with the goals of exposure treatment. Results of this preliminary RCT are encouraging, as they provide evidence of an additional option for at-risk smokers with a history of early lapse. We believe this strategy holds significant promise given the strong relationship between levels of distress and negative affect and smoking lapses.

Future clinical trials are planned to examine the applicability of this DT treatment for the general population of smokers.

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POS2-72
MEDIATORS OF THE RELATIONSHIP BETWEEN NICOTINE REPLACEMENT THERAPY AND SMOKING ABSTINENCE AMONG PEOPLE LIVING WITH HIV/AIDS
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Cigarette smoking is highly prevalent among people living with HIV/AIDS and poses unique health risks. Smoking cessation programs tailored to this population have demonstrated improved smoking outcomes with Nicotine Replacement Therapy (NRT). The current study examined 6-month abstinence rates from a randomized clinical trial targeting 412 HIV+ adult current smokers (51% European-American, 17% African-American). NRT was tested whether two psychological variables — self-efficacy and decisional balance — mediated the relationship between NRT compliance and 7-day point prevalence abstinence (PPA) rates assessed at 6-month follow-up. NRT-related contacts (patch pick-ups) improve smoking abstinence at 6-month follow-up, even after controlling for race and baseline values of both putative mediators (self-efficacy to resist smoking, decisional balance regarding the importance of smoking to the individual). The total effect of NRT-related contacts on outcome suggested an increase in the regression-adjusted odds of smoking abstinence by 35% per additional contact (AOR=1.35; 95% CI 1.03-1.76). The direct effect of NRT-related contacts on both mediators, smoking self-efficacy (p<0.001) and decisional balance (p=0.0178), was also established. Meeting criteria for complete medication, 6-month smoking abstinence rates improved significantly with increases in these potential individual-level mediators. While the association between smoking abstinence was no longer significant once changes in self-efficacy and decisional balance were taken into account. Hispanic participants had better smoking outcomes than Whites (AOR=2.84; 95% CI = 1.27-6.34), which was largely due to larger gains in self-efficacy post-baseline to 6-month follow-up. Hispanic participants were more motivated to quit smoking, as evidenced by higher percentage of their smoking abstinence rates no longer differed from those of the reference group (p=0.781). Cigarette smoking cessation programs that can serve as a complement to NRT to address key psychological mediators of smoking relapse are needed to support smoking cessation efforts among people living with HIV/AIDS.

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POS2-73
FACTORS ASSOCIATED WITH NOT RETURNING FOR RANDOMIZATION DURING CLINICAL TRIALS
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Ethnic minorities experience greater tobacco attributable morbidity and mortality, yet they remain under-represented in clinical trials. There is a critical need to identify barriers to recruiting and retaining minorities into clinical trials. Kick it at Swope III (KIS-III) is a double-blind, placebo-controlled, randomized clinical trial to evaluate the efficacy of bupropion in African American light smokers. Following extensive community recruitment and screening, over one third of eligible smokers were not randomized because they do not keep their appointments for enrollment and randomization. The purpose of this analysis is to examine factors associated with not returning for randomization. Out of 568 interested smokers who completed screening, 317 were eligible of which 201 (63.4%) returned for randomization. Evaluating age, gender, cigarettes per day (cpd), and years smoking current level of cigarettes we found no significant differences between those randomized and those who did not return for randomization. Overall, eligible participants had a mean age of 46.6 years (SD=11.7) for 15.5 years (SD=4.4) of smoking. While this analysis did not identify statistically significant factors associated with not returning for randomization, the absence of group differences supports the future generalizability of the findings of our clinical trial. This analysis is limited to data collected within our screening process and does not include substantial demographic, psychological, and smoking history factors collected only after study enrollment at the randomization visit: it is possible that factors such as motivation to stop smoking, employment, or financial resources may influence decisions of participants to attend the randomization visit. Continued efforts are needed to target appropriate strategies to improve recruitment, enrollment, and retention of minority smokers into clinical trials.

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POS2-74 EXTENDED COGNITIVE-BEHAVIORAL THERAPY FOR TOBACCO DEPENDENCE: EXPLORING MECHANISMS OF CHANGE

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Although extended cognitive-behavioral therapy (CBT) for tobacco dependence has yielded high long-term abstinence rates (e.g., Hall et al., 2004), little is known about the mechanisms that mediate treatment effects. That is, we do not well understand how or why extended CBT produces change. Examining mechanisms of change is important because it can direct more efficacious smoking cessation interventions. The primary aim of the current investigation was to evaluate potential mediators of an extended cognitive-behavioral smoking cessation intervention. Using data from a randomized clinical trial of smoking cessation, this study evaluated the impact of negative affect, social support, and abstinence self-efficacy on abstention. Participants receiving brief treatment (N = 100) were compared to those receiving extended CBT (N = 99). A series of regression analyses was used to assess the relationships between treatment condition, potential mediators, and abstention. Results failed to support a mediational role of either negative affect or social support. However, analyses did reveal that extended CBT increased abstinence self-efficacy over the first 52 weeks post-cessation. This effect, in turn, was positively associated with seventy point-prevalence abstinence at week 52, remained significant after controlling for treatment condition, and reduced the association between treatment condition and abstinence. Abstinence self-efficacy accounted for 68% of the total effect of treatment condition on smoking abstinence. The results of the present study are consistent with theories of relapse (e.g., Marlatt & Gordon, 1985) and studies of more time-limited interventions, and underscore the importance of abstinence self-efficacy in achieving long-term abstinence from cigarettes. Future investigations are needed to elucidate those factors that occasion change in this construct.

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POS2-75 THE DAY-TO-DAY PROCESS OF STOPPING OR REDUCING SMOKING: A PROSPECTIVE STUDY OF SELF-CHANGERS

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Almost all descriptions of attempts to quit smoking have focused on what happens after an abrupt quit attempt and typically end once a smoker relapses. The current study examined the day-to-day process preceding an attempt to stop or reduce smoking, during abstinence and reduction, and then after a failure to quit or reduce. We recruited 220 adult daily cigarette smokers who planned to abruptly quit, to gradually quit, to reduce only, or not to change on their own. Participants called a phone each night for 28 days to report cigarette use for that day and their intentions for smoking for the next day. No treatment was provided. Four main findings emerged: first, many participants showed a complex pattern of multiple situations among smoking, abstinence and reduction over a short period of time. Of the 121 participants who planned to change their smoking, half transitioned between smoking, abstinence, and reduction at least twice within the month. Second, reduction outcomes were common; i.e., 89% reported at least one daily intention to reduce and 67% reported at least one day of a reduction attempt, defined as at least 50% reduction from baseline COPD. Third, daily intentions to quit strongly predicted abstinence on the next day (OR = 13.6 [95% confidence interval = 8.4-21.9]), while daily intentions to reduce weakly predicted reduction (OR = 1.5 [95% CI = 1.0-2.3]). Fourth, most change attempts only lasted 1 or 2 days; the median length of participation for first quit attempt was 2 days (95% confidence interval = 1-10 days), and the median length of their first reduction attempt was 1 day (95% CI = 1-2 days). We conclude that the day-to-day process of attempts to change smoking among non-treatment seekers is more dynamic than previously thought. This suggests repeated treatment beyond initial lapses and relapses and flexibility about initial goals may be helpful.

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POS2-76 THE STOP STUDY: EFFECTIVENESS OF PROVIDING FREE NICOTINE REPLACEMENT THERAPY AND BRIEF COUNSELING TO LOW-SOCIO-ECONOMIC POPULATIONS

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Objective: To determine whether providing free nicotine replacement therapy (NRT) and brief counseling is an effective way to increase quit rates among smokers using socioeconomic, psychiatric and healthcare accessibility challenges. This analysis examined the subjects' characteristics and smoking status 6- and 10-weeks after starting treatment.

Methods: Eligible clients of participating community health centres across Ontario, Canada were enrolled and provided with up to 10 weeks of free NRT and at least 3brief counseling sessions. Subjects were assessed at baseline, and 6 and 10 weeks after starting NRT.

Results: 184 smokers (52% male, mean age of 46.5 years) enrolled at 11 community or aboriginal health centres. 82% of subjects smoked at least 15 cigarettes per day and 59% had not made a quit attempt in the past year. 59% of subjects were currently unemployed, 47% did not have a university degree, 38% had an annual household income ≤$20,000. A current or past psychiatric diagnosis or substance use problem was reported by 48% and 34% of subjects, respectively. Of 90 subjects who completed at least 6 weeks of treatment, 43% had quit smoking and 86% had made a quit attempt. Of those who completed the 10-week follow-up (n=75), 48% had quit smoking; those who had not had quit had reduced their average cigarette consumption by at least 73% to 5.6 cigarettes per day. An annual income >$20,000 was significantly associated with successful study completion and smoking cessation at both 6 (chi-square=8.57, p=0.003) and 10 weeks (chi-square=4.22, p=0.040). Subjects who completed the 10-week interview and quit were significantly older than those who did not (p=0.001).

Conclusion: Free NRT combined with brief counseling in a clinic setting was effective in helping smokers quit or significantly reduce their smoking. Despite the availability of free NRT, low income was negatively associated with successful cessation, suggesting there are barriers to cessation among low-income groups other than the cost of pharmacotherapy. Outcomes at 6 months will also be presented.

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POS2-77 MONITORING TRENDS IN OUTCOMES FOR AN INTERNET-BASED TOBACCO CESSATION PROGRAM

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Objective: Since 2003, ClearWay Minnesota and HealthWays QuitNet have provided an internet-based tobacco cessation program with features including social support, interactive email, online counselor, and mascot. Since inception, three evaluations have assessed registrant characteristics, quitting and costs per quit. Changes in these measures over time are reported.

Methods: Evaluations were conducted 6 months after program registration for registrants from February-April 2004 (n=665, 78.1% response rate); from March-May 2007 (n=657, 68.0% response rate); and from October-December 2007 (n=697, 67.9% response rate). Of those completing a follow-up survey, 62.3% did so online and 37.7% by phone.

Results: Registrant characteristics remained stable over the three evaluation periods, despite the introduction of varenicline (between Time 1 and Time 2), a state-wide smoke-free law (between Time 2 and Time 3), and downward economic trends. Between Times 1 and 2 there was a slight increase in the number of registrants with a high school education or less (p<0.05), without insurance (p<0.001), and in action/maintenance stages over time (p<0.01), and slightly fewer married registrants (p<0.01). Using a missing-smoking calculation, 7-day point prevalence increased incrementally over time (15.6%, 18.4%, 21.2%) (p<0.05). Use of any medications increased (52.1%, 61.7%, 62.8%) (p<0.001). Use of bupropion increased incrementally (32.0%, 47.0%, 50.0%, 7.6%, 7.0%) and use of varenicline increased (0%, 0%, 0%, 22.6%, 29.4%) (p<0.001). Cost per registrant increased substantially from Time 1 ($29.90) to Time 2 ($46.82) and decreased slightly at Time 3 ($43.87). Cost per quit fluctuated over time ($37.38, $42.86, $33.60, $33.46).

Conclusions: This series of evaluations constitutes an extensive and unique data set on a standalone internet-based tobacco cessation intervention. While not a clinical trial, this provides a long-term look at a real-world intervention in practice. The results demonstrate that an internet-based program can be cost-effective, and can consistently produce quit rates higher than those anticipated by quitting with out help.

Funding was provided by ClearWay Minnesota.

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A randomised controlled trial of sending an SMS message regarding the availability of online registration to increase registrations from hotel workers (trial of mobile phone based smoking cessation support)

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Background: Recruitment to smoking cessation trials is an important issue with many trials failing to recruit on time. Few methods to increase recruitment have been evaluated by randomised controlled trial. Some participants may find registering by phone inconvenient whilst others might prefer registering online. The effect of offering a choice of mode of registration on trial recruitment has not been reported. T2xstop is a large randomised controlled trial of mobile phone based smoking cessation support being conducted among 5800 participants. Many participants make initial contact by texting in their interest but do not answer return calls. We aimed to evaluate the impact on trial registrations of sending a SMS message to potential participants regarding our newly available online registration.

Methods: 937 participants who had made initial contact with T2xstop but who had not answered return calls were randomly allocated to receive the SMS message about online registration or not. Three weeks after sending the SMS message a researcher blinded to the allocation assessed whether or not the participants had completed registration for the trial.

Results: 4.5% (21/470) of participants who were sent the message about online registration were registered into the T2xstop trial compared to 1.5% (7/467) of those who were not (RR 2.9; 95% CI 1.3-6.8) p<0.01. However of these only 0.5% (2/470) of the in the text group were women compared to 0.5% (2/467) in the control group were web based registrations (RR 1.95; 95% CI 0.3-8.9), the others were registered by mobile.

Discussion: This message may potentially state participants relating that online registration was available increased registrations but not web based registrations. The message may have worked by reminding participants that T2xstop was trying to contact them.

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POS2-80

THE DEVELOPMENT AND INITIAL VALIDATION OF THE ABSTINENCE-RELATED MOTIVATIONAL ENGAGEMENT SCALE

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Abstinence-related motivation has long been considered a key contributor to smoking cessation and maintenance of abstinence. Traditional assessment of abstinence motivation measures one’s broad desire to stay abstinent (e.g., “I am committed to being smoke-free”), which may not sufficiently reflect individual differences and temporal changes in motivation. In contrast, we developed the Abstinence-Related Motivational Engagement (ARME) scale to evaluate the degree to which abstinence motivation is translated into daily experience within 4 domains: (a) Effort (thinking about being abstinent); (b) Priority (relative importance placed on abstinence); (c) Vigilance (anticipating and preparing for high risk situations); and (d) Excitement (enthusiasm about being abstinent). We hypothesised that ARME declines over time, contributing to relapse risk. As an initial validation test, we administered the 16-item ARME scale to 162 former smokers who had quit smoking within the past year. Participants were recruited from smoking cessation websites (n=126) and from a local newspaper ad (n=36). The sample was 76% female, with a mean age of 45, who had smoked a mean of 23.83 cpd for 25.44 years. Their length of abstinence ranged from 1 week to 12 months, with a mean of 4.5 months. The ARME scale had high internal consistency reliability (alpha = .89). As predicted, total scale score was negatively correlated with length of abstinence (r = -.38, p < .01). In contrast, and also as predicted, other traditional motivational items were not associated with length of abstinence (r = -.01, ns). Finally, also as predicted, ex-smokers recruited from smoking cessation websites reported higher ARME scores than those from the community (93.15 vs. 79.36, p < .01). Findings suggest that the ARME is sensitive to changes over time that typical measures of abstinence motivation may overlook. Also, greater ARME may be inferred early in cessation and is possibly associated to maintain cessation while enduring nicotine withdrawal symptoms and conditioned cravings, but it may be difficult to sustain high ARME over time. Future research will examine ARME as a predictor of cessation outcome.

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POS2-81

IMPROVING QUALITY THROUGH STANDARDS: NAQC’S QUITLINE QUALITY INITIATIVE

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Introduction: The North American Quitline Consortium (NAQC) was formed in 2004 as a member organization to promote evidence-based quitline services across diverse communities in North America. In response to member requests for quality benchmarks and standards, NAQC developed new operational, evaluative, and research standards. NAQC launched its Quality Initiative in 2008. The Quality Initiative is designed to develop a framework for addressing issues related to service and operations quality and standards.

Methods: To date three white papers have been drafted by content experts: an overarching quality framework paper, a paper on standard measurement of quitline reach and a paper outlining a standard measurement of quit rates. Feedback has been solicited via conference calls, surveys, and email from the general membership, and a face-to-face meeting with the Consortium’s Advisory Council. Authors will incorporate feedback and papers will be finalized in December 2008. Results: “Measuring the Reach of Quitline Programs” differentiates between quitline treatment reach and “quitline intake reach” and recommends a standard measurement formula. “Measuring Quit Rates” highlights important issues related to the denominator and numerator used when calculating quit rates and recommends standards for each. Finally, “The Quality Initiative: NAQC’s approach to quality measurement” recommends standards for calculating, statistically representing and interpreting quit rates for quitlines. Challenges to date include: ensuring that the process is member-driven; developing white papers that are based on sound science but that also reflect an understanding of operating quitlines in a “real world” setting; and ensuring that proposed standards reflect a shared responsibility on the part of quitline funders and service providers for improving quality. Funding provided by the American Cancer Society, the Centers for Disease Control and Prevention, and the National Association of Chronic Disease Directors.

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**POS82**

**FINAL RESULTS FROM THE NEW ENGLAND SRIP (SMOKING CESSATION/REDUCTION IN PREGNANCY) TRIAL**

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**Background:** Despite continued advice to quit smoking, over 17% of pregnant women continue to smoke and rates are even higher among underserved pregnant women. Yet, underserved women are less likely to receive ongoing prenatal care and less likely to be exposed to repeated smoking cessation messages. This randomized controlled trial was developed to assist high-risk, low-income, pregnant women to quit smoking using one of 3 smoking cessation programs differing in complexity and cost.

**Methods/Design:** Pregnant women completed a registration form at their first prenatal visit. To be eligible, participants had to: 1) smoke at least 1 cigarette in the past week; 2) speak English or Spanish; 3) < 27 weeks gestation; and 4) have access to a telephone. Participants completed an informed Consent and received a Quit Kit (A Patient's Guide to Quitting Smoking and video to Commit Quit). Participants completed a telephone survey and were then randomized to one of 3 groups: Group 1: Quit Kit (QK); Group 2: QK and participation in a Quit & Win contest (Q&W); and Group 3: 3 motivational interview telephone calls. Self-reported smoking status was assessed at baseline, 32 weeks gestation, and 6-months postpartum. Smoking status was biologically confirmed by testing urine samples for cotinine on a subsample (21%) of women.

**Results:** Baseline demographic characteristics were similar for all 3 groups. Of 1,065 women enrolled, 23% self-reported to have quit smoking by 32 weeks gestation. Of 219 self-reported quitters with a valid cotinine measurement, 17.2% had evidence of active smoking and were reclassified as smokers. The reclassified quit rates were: Group1=19.1%, Group2=15.5% and Group3=21.2% (p=0.15). Cotinine-confirmed quit rates by race/ethnicity suggested that rates were lowest for Caucasian/other women (13.3%) and similar for African-American (21.5%) and Hispanic (23.2%) women (p=0.007).

**Conclusions:** These results suggest that the current intervention was successful in changing smoking behavior among underserved pregnant women. Additionally, our intervention appears effective across racial/ethnic subgroups, which require additional investigation.

National Institutes of Health, National Heart, Lung, and Blood Institute.

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**POS84**

**FINDINGS FROM AN EVALUATIVE STUDY OF QUITASSIST(R) AND A SAMPLE OF OTHER ONLINE SMOKING CESSATION RESOURCES**

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1Corporate Responsibility & Public Affairs Research Altria Client Services Inc.

**Background:** The harmful effects of smoked and smokeless tobacco on the oral tissues and general health have been known for more than forty years. Fortunately, tobacco education in U.S. dental hygiene schools has steadily increased over the past twenty years. The aim of this presentation is to share the results of an online survey evaluating the quit rates among five quitting groups of Southwestern women. Surveys were mailed to 283 dental hygiene program directors and returned by 182 participants, a return rate of 66%. Fifty percent or more of the programs included tobacco education topics in pharmacology, seminar/theory, and prevention content areas.

**Results:** Most frequently related to tobacco education were: a) review of general diseases related to tobacco use, such as lung cancer, emphysema, and heard disease – 94.5%; and b) a review of oral-tobacco related diseases, such as periodontal disease. When compared to other national surveys, reduced tobacco education in the current study showed a steady improvement in the amount of time spent and clinical integration. Interestingly, program directors indicated they expected dental hygiene graduates to demonstrate a competency level of a moderate level of presentation (73.1%) or Intensive level of presentation (15.9%). Tobacco education continues to be an important component in dental hygiene education in the United States and throughout the world. A key question as to the level of tobacco cessation competency was addressed for the first time in this study and may be used to guide dental hygiene curriculum committees as they discuss tobacco education in their programs.

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OS2-69 DRINKING AND SMOKING IN ADULT NON-DAILY SMOKERS

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Non-daily smokers or intermittent smokers (ITS) constitute a substantial and growing proportion of smokers. In the US, they comprise 25-30% of all adult smokers, and these proportions are growing steeply. Many commentators associate non-daily smoking with a pattern seen among teens or young adults in which smoking is concentrated in occasions when alcohol is consumed. We report data on smoking and drinking in a sample of 48 adult ITS (minimum age 21, average age 35.1±12.0). Ecological momentary assessment methods were used to assess smoking patterns: Subjects used a palmtop computer diary to record cigarettes for 3 weeks, noting whether they consumed alcohol and in what quantity, and were also “beeped” at random by the computer about 5 times a day to assess alcohol intake. This analysis is based on 1641 smoking occasions, and 3316 randomly sampled non-smoking occasions. Smoking was very strongly associated with drinking alcohol (OR=16.5, 95% CI 12.4-22.5). The association remained, though at a reduced level (OR=3.9, 95% CI 2.6-4.1), even after controlling for many potential confounding factors (time of day, day of week, location, smoking regulations, cigarette availability, presence of friends, others smoking). On drinking occasions, whether the person smoked was unrelated to the number of drinks consumed or to self-reported intoxication. Importantly, despite the powerful association between smoking and drinking among ITS, the vast majority of ITS cigarettes (83%) were smoked when subjects were not drinking. Thus, while drinking alcohol seems to be a strong stimulus for ITS to smoke, their smoking is not dominated by drinking occasions, and occurs far more often in other contexts.

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OS2-88 LABORATORY AND LONGITUDINAL EXAMINATION OF CO-OCCURRING DRINKING AND SMOKING BEHAVIORS IN HEAVY AND LIGHT DRINKERS IN THEIR TWENTIES

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While smoking and drinking are highly associated, the factors involved in co-occurred use of these substances during the early adult years are unclear. This study, part of the larger Chicago Social Drinking Project, included both an acute laboratory paradigm and a long-term follow-up to examine alcohol’s effects on smoking urge and smoking and drinking patterns over the next two years. Participants were young adult nonalcoholic social drinkers (95% male, mean age 25.6 yrs), who were either binge heavy drinkers (HD; n=104) or light drinkers (LD; n=86). Smokers were included if they smoked < 25 cigarettes daily and could refrain from smoking for eight hours during each of the laboratory sessions. The study included three randomized laboratory sessions to examine acute response to two doses of oral alcohol (0.4 and 0.8 g/kg) and a placebo. Follow-ups occurred at 3-month intervals for two years after the laboratory sessions, with an overall 99.1% participation rate. Smoking rates were substantially higher in HDs (64%) compared to LDs (12%); p<.001). HD smokers smoked more days per month (16.0 vs. 6.7 days) and more cigarettes per occasion (6.34 vs. 3.10) than did LD smokers. Results from the laboratory testing showed that alcohol (vs. placebo) significantly increased smoking urge (p<.001), and, for HD smokers, alcohol increased subjective stimulation (p<.01). Two years later, smoking rates remained higher in HDs than in LDs (48% vs. 5%), and HD smokers continued to smoke more days per month (12.6 vs. 4.9 days) and more cigarettes per occasion (5.4 vs. 1.6) than LD smokers. In HD smokers, two to three times more cigarettes were smoked on days with binge drinking (7.3 cigarettes) compared with non-drinking or light drinking days (2.3 and 3.3 cigarettes, respectively). Further, laboratory responses, including alcohol-induced increases in smoking urge and stimulation, predicted smoking frequency, quantity, and binge drinking behavior over the ensuing two years (p<.001). This study reveals alcohol elicitation of smoking urges and positive-like effects, which may contribute to co-occurring binge drinking and smoking behaviors in young adults.

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POS2-91  IMPROVING PHYSICIAN SMOKING CESSATION COUNSELING

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The Modular Lifestyle Intervention Tool (MLIT) is a novel hand-held computer program based on the Transtheoretical Model (TTM). The MLIT helps assess the patient’s "stage" and assists clinicians with staged-based smoking cessation counseling. Each stage is linked to scripted motivational interviewing (MI) and stage relevant clinical content. The tool also has local and national resources for cessation follow-up. The MLIT was evaluated with 17 primary care physicians. Pre-post differences in physician smoking cessation counseling behaviors, knowledge and comfort/self-efficacy were measured in 4 practices for 4 months. Statistically significant increases were seen for physician self-efficacy, comfort in following-up with patients, and performance on 5A's behaviors after use of the tool. There were no statistically significant changes in pharmacotherapy use or knowledge. This approach shows promise for translating evidence about smoking cessation counseling into practice and should be studied with a representative sample of physicians. A mobile e-Health educational intervention was also developed to augment teaching medical students behavioral counseling skills, and was evaluated in a randomized controlled study using a cohort of 119 medical students during their 3rd year clerkships at the University of Virginia. In the standardized patient encounter the control group performed 54% of key MI activities while the intervention group only performed 45% (t=2.94, p<.004). Many students reported not using the tool due to lack of time, training and multiple competing demands - but indicated that additional training and practice time with the tool may have led to increased use. Additionally, some students did not feel comfortable using a PDA with patients present, but did use it for review and clarifications. Differences between physicians' experiences and medical students' experiences will be discussed.

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POS2-92  EVALUATION OF A PDA-BASED TOBACCO DEPENDENCE EDUCATIONAL PROGRAM FOR MEDICAL STUDENTS

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Though few medical schools can identify a formal tobacco training curriculum when surveyed, medical students at Loma Linda University receive 4 hours of training in medical management of tobacco dependence interventions (2-hours didactic, 2-hours small group with real patients) during the 3rd year orientation week. A pre- and post-test (10 item) assessed the level of improved knowledge from this 4-hour session. A PDA program (using HandBase software) was developed for the workshop to teach a structured question sequence to interview tobacco users when the school required PDAs to document patient encounters and procedures. During their 3rd year family medicine and internal medicine clerkships, students receive 2 more hours of didactic and skills training and interview 10 tobacco users with the PDA interview guide. In the 4th year, students attend a stop smoking class and clinic (4 hours) at a VA hospital and can choose an additional 2 or 4 week “Stop Smoking” elective with more research or clinical training. The standardized MACY Objective Structured Clinical Examination (OSCE) during the 4th year has demonstrated that LLU students ask about smoking 95% of the time with a presenting complaint of “Cough”, 89% in a case with “Chest Pain”, but only 75% in a routine Diabetes Mellitus case. As a result, our current curriculum goal is to improve the recognition of related risk factors of diabetes, metabolic syndrome and tobacco use by building into the PDA program. Information technology tools can enhance medical schools curriculum to improve tobacco treatment skills of future physicians.

Funding was provided by Loma Linda University.

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**SRNT • Poster Session 3**

**POS3-2**

**ELECTROENCEPHALOGRAPHIC (EEG) RESPONSE TO VARIATION IN SMOKELESS TOBACCO PH**

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**Background:** Rates of cigarette smoking are declining, but smokeless tobacco (ST) use is increasing. Major cigarette companies worldwide are positioning them (Camel Snus, Marlboro Snus, Lucky Strike Snus). Attempts to characterize new tobacco products are hampered by unwillingness of tobacco users to use unfamiliar products for the length of time necessary to complete a trial and compare biomarkers of exposure. More acute testing methods are needed.

**Objective:** Aims were to determine electrocortical physiologic responses to variation in ST pH, and explore EEG as an acute method of comparing electrophysiological reactions to a single ST use. It was hypothesized that the higher pH product would produce a greater magnitude of responses in the brain.

**Method:** This was a within-subject, single blind, randomized, cross-over trial of two ST brands, similar in total nicotine content but different in level of free-base nicotine (Camel Snus Spice, 34.9%; Marlboro Snus Spice 9.5%). This pilot study used a sample of 114-hour abstinent established ST users, each with a laboratory visit on two separate days, at the same time of day (+1 hour). Order of use was counterbalanced. EEG data were collected at baseline, during 20 minutes of ST use and 10 minutes after the product was removed.

**Results:** The results of a multivariate ANOVA indicated that EEG can be used to detect changes in brain nicotine delivery during ST use. After controlling for brain region and hemisphere, a statistically significant Time by Product interaction was revealed at low alpha (8-10 hertz; p<0.025) and alpha (8-13 hertz; p=0.024) peaking at 9 minutes.

**Conclusion:** EEG is a unique method for examining human psychophysiological response to variation in pH of ST and demonstrated promise as an acute measure. A dose response relationship in change in cortical arousal was detected. When participants used the high free base nicotine ST, they experienced higher alpha indicative of “relaxation” of the cortex as compared to when they used the lower free base nicotine product.

This study was funded by The University of Maryland School of Public Health Research Seed Money Program.

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**POS3-3**

**CHANGE IN SELF-EFFICACY AMONG PERSISTENT SMOokers AND THE IMPACT OF THESE CHANGES ON SUBSEQUENT SMOKING CESSATION**

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**Background:** Self-efficacy has been associated with intent to stop smoking, abstinence success, and risk for relapse, but little is known about correlates of change in self-efficacy and how these changes influence cessation.

**Objective:** To identify correlates of change in self-efficacy among smokers over the initial 6 months of a cessation intervention and assess the impact of these changes on subsequent smoking cessation at 12 months.

**Methods:** Smokers recruited from rural primary care clinics completed a telephone survey assessing demographics, smoking history, and psychosocial variables (e.g., self-efficacy, motivation, depression) at baseline, month 6, and month 12.

**Results:** Among 520 participants reporting continued smoking at month 6, the mean change in Smoking Self-Efficacy Questionnaire scores was 2.94 (SD=10.85). Increases in self-efficacy were related to lower baseline self-efficacy (Coefficient=-0.56, SE=0.04, T=14.44, p<0.001), fewer cigarettes smoked per day at baseline (Coefficient=-0.21, SE=0.04, T=4.70, p<0.001), reductions in smoking over the 6-month period (Coefficient=-0.22, SE=0.05, T=4.24, p<0.001), having made a quit attempt in the first 6 months (Coefficient=2.14, SE=0.85, T=2.51, p=0.01), and not being married or living with a partner (Coefficient=2.78, SE=0.85, T=2.10, p=0.04). Among persistent smokers, abstinence at month 12 was related to fewer cigarettes smoked per day at baseline (OR=0.96, 95% CI 1.02, 1.08, p<0.001).

**Conclusions:** Attending to the dynamic process of self-efficacy may provide more predictive information than a single assessment. Future research should examine the impact of changes in self-efficacy and develop interventions supporting changes in self-efficacy that could facilitate subsequent smoking cessation attempts.

This research was supported by grant number CA 1102390 from the National Cancer Institute at the National Institutes of Health.

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**POS3-4**

**SELF-EXEMPTING BELIEFS ABOUT THRESHOLD RISK BEHAVIOUR**

Omid Fotuhi, B.Sc., B.A.; Geoffrey T. Fong, Ph.D., Juliana Parker, B.A., and William Callery, B.Sc., University of Waterloo

Knowledge about the harmful effects of smoking is now widely accepted by both smokers and nonsmokers in North America. Past research on self-exempting beliefs has demonstrated that smokers may be motivated to change their “knowl-edge” about the adverse effects of smoking in order to reduce the tension that arises from the inconsistency between the beliefs they hold and the behaviour they engage in. Therefore, perceptions of risk play an important role in the initiation and maintenance of cigarette smoking. In this study, we set out to capture the self-exempting beliefs that affect perceptions of risk. In particular, we wanted to measure the degree to which smokers adjust their beliefs about the threshold values of risk involved in smoking behaviour. Both smoking and non-smoking university students (n=115: 46 smokers and 69 nonsmokers) agreed that smoking causes lung cancer, and that smokers are at a higher risk of getting lung cancer. However, smokers believed it would take many more cigarettes per day (M=15.14, SD=8.01) to cause lung cancer than non-smokers (M=5.39, SD=10.85). Increases in self-efficacy were related to lower baseline self-efficacy (Coefficient=-0.21, SE=0.04, T=4.70, p<0.001) and greater increases in self-efficacy from baseline to month 6 (OR=1.05, CI 1.02, 1.08, p<0.001).

**Conclusions:** Attending to the dynamic process of self-efficacy may provide more predictive information than a single assessment. Future research should examine the impact of changes in self-efficacy and develop interventions supporting changes in self-efficacy that could facilitate subsequent smoking cessation attempts.

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**POS3-6 ANALYSES OF SNUS PRODUCTS IN WEST VIRGINIA AND THEIR PUBLIC HEALTH IMPLICATIONS**

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This study examined the constituents of a new form of smokeless tobacco, snus, currently being tested marketed by RJ Reynolds and the Liggett Group in West Virginia (USA). Samples of RJ Reynolds' Camel Snus® entries (3 flavors) and of the Liggett Group's Tourney® (3 flavors) were analyzed for nicotine, free nicotine, tobacco-specific N-nitrosamines (TSNAs), moisture, dry matter, and pH, using standard methods developed by Health Canada and the Centers for Disease Control and Prevention. The free nicotine content for all flavors of Camel Snus® is >3mg/g, which is stronger than many snuff products sold in the US. The free nicotine for the Tourney® 'Original' flavor is much lower at 2.17 mg/g, which is >4 times the level of nicotine in the brand's other flavors, i.e., <0.5 mg/g—a very low level. These two brands of snus being test marketed in West Virginia differ in nicotine strength. The Camel Snus® brand could be attractive to current smokers as a means of maintaining nicotine levels in situations where smoking is not possible, thus perpetuating tobacco addiction and product use. The Tourney® brand of snus is much richer in nicotine. Tobacco manufacturers manipulate nicotine levels in snus, and can do so even within a brand's flavors. Furthermore, they can do this without disclosing this information to consumers. It is not clear what the manufacturers' marketing strategies are, and why the differences in nicotine are so pronounced. Snus products have been part of the tobacco harm reduction debate in the US and possible public health implications from analyses of these tested products will be presented.

This research was supported by the West Virginia Department of Health and Human Services, and by Cooperative Agreement S-U48-DP00052-04 from the Centers for Disease Control and Prevention.

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**POS3-7 WEST VIRGINIA RIGHT FROM THE START (RFTS) SMOKING CESSATION & REDUCTION IN PREGNANCY TREATMENT (SCRIPT) DISSEMINATION EVALUATION**

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Smoking during pregnancy is the most significant cause of infant morbidity, especially low birth-weight (LBW), and mortality, in the U.S. About 20% of LBW deliveries are attributed to maternal smoking, which doubles the relative risk of delivering a LBW infant. During the last decade the LBW rate in West Virginia (WV) increased more than 30%, while the national rate increased 9%. At 45%, unchanged since 1995, the self-reported prenatal smoking rate among WV Medicaid recipients is the highest in the U.S. While the causes of these perinatal problems and trends are complex, the leadership of the WV Department of Health and faculty at the GWU School of Public Health have established a partnership to define effective solutions. We have developed a plan, with support from the NCI-NIH (2007-2011), to disseminate and evaluate the level of adoption and behavioral impact of the evidence-based Smoking Cessation and Reduction in Pregnancy Treatment (SCRIPT) as a regular component of the existing statewide RFTS Project for pregnant clients. The SCRIPT Program is a synthesis of methods derived from a comprehensive review of the relevant world literature. The objectives of SCRIPT are to increase cessation rates and to reduce the prevalence rate among WV Medicaid clients. Three peer-reviewed, randomized clinical trials (SCRIPT Trials I, II, III (1982-2002), funded by the National Institutes of Health, and involving 2000+ Medicaid clients have been conducted by SCRIPT PI. Since 2007, NCI has funded the investigators to evaluate the dissemination of the evidence-based SCRIPT Program with the WV Right From the Start (RFTS) clients. Since 2002, RFTS clients who have self-reported smoking at their first home visit have been provided new intervention methods by Designated Care Coordinators (DCC). In this unique, statewide dissemination evaluation, investigators are working to enhance organizational development and change to adopt the SCRIPT Program throughout all its DCC statewide. This paper will present methods of dissemination and organizational changes required to successfully disseminate a evidence-based program in a state-wide system.

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**POS3-8 DEVELOPMENT AND EVALUATION OF CLICK CITY: A TOBACCO PREVENTION PROGRAM FOR FIFTH GRADE STUDENTS**

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Oregon Research Institute; 1InterVision

This paper describes the development of an innovative school-based universal prevention program for 5th graders delivered via the school intranet and presents pre/post findings from an efficacy trial. This interactive project consists of 17 activities, delivered in eight sessions over a four-week period, each targeting a different risk factor. Pre/post results are presented from an efficacy trial wherein results comparing data from students in eight intervention with data from students in eight yoked usual tobacco education schools showed that children in the intervention schools significantly decreased their intentions and willingness from one week prior to use of Click City to one week after use of Click City while willingness and intentions in children in usual tobacco education schools increased across the same six-week period (p<.001).

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A LONGLATITUDE STUDY OF THE INFLUENCE OF PARENTS’ ADULTS’ DECISIONS TO QUIT SMOKING


Many adolescent cigarette smokers make attempts at quitting, but few of these attempts are successful. This failure of teen smokers to quit may be due to the social environment in which they are embedded. Although it is largely assumed that parents support their children during quit attempts, little research has examined the potential for parent behaviors to actually hinder quitting. Our research examines the impact of parental attitudes and behaviors on teen smoking cessation attempts. A sample of 195 adolescent smokers (41.7% black, 58.3% white) were enrolled in a four-session school-based smoking cessation program. Based on motivational interviewing, the program was administered by study health educators. At baseline, teens provided data on the occurrence of specific parental behaviors and attitudes. They also provided data on their smoking status each week. During the program, 60 teens reported making at least one quit attempt. A quit attempt was defined as having intentionally quit smoking for at least 24 hours. Logistic regression analyses indicated that parental behavior and attitudes at baseline significantly predicted which teen smokers would make quit attempts during the study. Parents who previously forbade smoking in their homes were 5.6 times more likely to have their child try to quit, p<.01. Adolescents whose parents were not a source of cigarettes were 2.67 times more likely to make a quit attempt, p<.01. Similarly, teens whose parents did not like smoking were more likely to try to quit smoking, OR=5.91, p<.01. Parental attitudes at baseline also appeared to affect the likelihood that their offspring would attempt smoking cessation. When teens believed their parents would not be annoyed by their irritability during a quit attempt, they were more likely to try to stop smoking, p<.01. Further, baseline distress about adolescent smoking among fathers and mothers was associated with an increased probability of adolescent quit attempts, p<.05. These results suggest that parental behaviors and attitudes have a significant influence on the likelihood that adolescents will attempt smoking cessation.

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WEIGHT CONCERNS AMONG WOMEN CALLING A STATE TOBACCO QUITLINE: DIFFERENCES BY BODY MASS INDEX AND RACE/ETHNICITY

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Introduction: Little is known about cessation-related weight concerns among women who call tobacco quitlines and if differences in weight concerns exist by body mass index (BMI) and race/ethnicity.

Methods: Adult tobacco users who registered for services with the Oklahoma Tobacco Quitline were asked questions to determine if they feared weight gain and concern for cessation-related weight gain. A 50+ score on one of two weight concerns questions defined the outcome. BMI was calculated using standard cutpoints, with normal BMI used as the reference. Log odds of gender differences in BMI and weight concern scores, only females were included. Race, ethnicity, age, education, marital status, and tobacco use history were examined as covariates. Multiple logistic regression was used to calculate odds ratios (ORs) and 95% confidence intervals (CIs).

Results: An interaction between race and BMI was observed; thus, separate models were created for white (n=2013), African American (n=191), American Indian (n=231) and Hispanic (n=71) women. BMI was associated with cessation-related weight concerns while controlling for other covariates, but the association varied by race/ethnicity. Among white women, underweight BMI was inversely and significantly related to weight concerns (OR=0.17, 95% CI 0.10-0.30). The odds of weight concerns among overweight white women were increased in overweight women (OR=1.78, 95% CI 1.78-2.97), and increased 2.95 times (95% CI 2.29-3.80) among obese white women. For African American women, the association between BMI and weight concerns was not as strong, and only significant for obese women (OR=2.71, 95% CI 1.30-5.65). For African American and Hispanic women, there was no association between BMI and weight concerns for underweight and overweight women, but a strong association among obese women (OR=6.96, 95% CI 3.81-21.08 for African American women; OR=6.29, 95% CI 1.38-28.62 for Hispanic women) although sample sizes were small.

Conclusions: Weight concerns were significantly related to BMI, and the relation was particularly strong among African American and Hispanic obese smokers. These findings may have implications for quitline treatment protocols.

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PREDICTORS OF SMOKING DURING PREGNANCY: ANALYSIS OF THE NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEYS

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Although accurate population estimates are difficult to determine, smoking prevalence during pregnancy appears to have substantially declined within the United States in the last 20 years. However, evidence suggests that this decline may not be due to a general decrease in smoking prevalence, but rather a specific drop in smoking among pregnant women rather than a specific drop in smoking among pregnant women. Couples with a lack of demonstrated efficacious cessation treatments for pregnant women, it is unclear if a direct impact on this population is being achieved. As such, there is a strong need to better understand basic information regarding the characteristics of this population and how they may have changed over time. In attempting to assess this issue, a key question is not only do pregnant smokers differ from pregnant non-smokers, but do they differ from non-pregnant women smokers? The goal of this analysis is to assess predictors of smoking during pregnancy (PGSMK) compared to non-smoking pregnant women (PNSMK) and non-smoking pregnant smoking women (NPSGSMK). Analyses were performed with 1988-2006 data releases from the National Health and Nutrition Examination Surveys (NHANES) using standard contingency table analysis on demographics, diet/exercise, Major Depression, and substance use. Data from the NHANES-III served as a baseline. Compared to PNSMK women, PGSMK women are similar on most demographic features, but significantly more likely to report a history of Major Depression (p<0.05), ever having used marijuana (p<0.001) and/or cocaine (p<0.01), and binge drinking within the last year (p<0.001). Conversely, no significant differences were noted on comorbid conditions between PNSMK, PGSMK and NPSGSMK women. Changes in patterns of use and associations with comorbid conditions are also presented. These results suggest that on a variety of potentially important clinical indicators pregnant women who smoke are quite similar to women who do not smoke. However, there is a greater impact on treatment development than characterization of how pregnant smokers are different from pregnant non-smokers.

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FACTORS ASSOCIATED WITH THE USE OF AIDS TO CESSATION IN ENGLISH SMOKERS

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Despite the availability of evidence-based smoking cessation treatments, many smokers are unable to quit smoking without their use. The aim of the present study was to determine factors associated with the use of smoking cessation aids among smokers trying to quit smoking. Data were used from the “Smoking Toolkit Study”; a series of monthly national surveys in England. The survey uses computer-assisted telephone interviews to examine the impact of smoking cessation aidstoagreaterextentinthefuture.
POS3-14 PERFORMANCE-PRACTICE STANDARDS AND A PROCESS EVALUATION MODEL FOR AN AHRQ RECOMMENDED PROGRAM FOR PREGNANT SMOKERS: THE SCRIPT PROGRAM—PROCESS-IMPACT LINKAGE

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The salience of defining characteristics, type, frequency, and intensity, of core treatment Procedures (P) and documenting delivery levels for all P's in prenatal care for smokers would seem to be self-evident. Reviews by the AHRQ, Cochran, and pressurized cold-smokers indicates, however, that the variation in meta-evaluation (MA) criteria for the 80-90 published evaluations of treatment methods for pregnant smokers, only 25 or 30 meet MA criteria. When performance measurement and process evaluation criteria are applied to the strong evaluations, only 4 or 5 described core program Procedures (P), and presented data documenting staff performance in the delivery of core P's. Although other criteria are essential to establish high internal validity, it is essentially program empirically link, at a 95% level of fidelity, its process to biochemically confirmed impact rates. Given the 35 year history of evaluations for pregnant smokers, it is time to define-measure what is "Best Practice" and what is "Poor Practice," and to require tobacco treatment evaluations to present data documenting the level of delivery and a summary performance measure for all core Procedures (Pn) for its implementation period. If an evaluation is methodologically sound and a significance level is documented, it is essential to establish the process—impact linkage. A Process-Impact Evaluation of the Smoking Cessation and Reduction In Pregnancy Treatment (SCRIPT) Program for a three year period involving 2500 patients, and 150 core (rewards) 95% or (P) for a state-wide Medicaid supported Perinatal Program will be presented. This NCi supported (2006-2011) "Dissemination-Implementation Evaluation" is designed to document institutionalization of an AHRQ recommended treatment by regular providers for a system of care for a high-risk population.

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POS3-15 PHYSICAL ACTIVITY PROMOTION BY NHS STOP SMOKING SERVICE ADVISORS: SUPPORT FOR THE TRANSTHEORETICAL MODEL AND QUALITATIVE INSIGHTS

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Physical activity (PA) can reduce cravings and regulate mood during smoking abstinence and may have a key role in smoking cessation. However, research into factors related to PA promotion within smoking cessation is lacking, and there are mixed views on whether simultaneous (v. sequential) multiple health behaviour change (i.e., quitting, increasing PA and dietary change) should be encouraged. We (1) determine the weekly and total time that smoking cessation advisors promote PA within 6/7 week NHS Stop Smoking Service clinics, and their stage of readiness to promote PA as an aid to quitting; (2) examine the cross-sectional relationships between PA and smoking cessation; (3) explore the relationship between PA promotion as a cessation aid and advisor characteristics and cognitions, within the Transtheoretical Model (TM) framework; and (3) explore the perceptions of advisors about multiple health behaviour changes through semi-structured interviews. Self-report surveys assessing PA promotion, TM variables, own PA levels and demographics were completed by 170 advisors (81% female) in England and Scotland, with a mean age of 39.4 years. Advisors reported spending 29 minutes promoting PA over a 6/7-week clinic on average, with 55% encouraging it for craving management. Those in a more advanced stage of readiness for promoting PA specifically, as a cessation aid, and those who spent more time promoting PA, held more positive beliefs concerning pros and cons, self-efficacy, outcome efficacy and importance of PA within smoking cessation. There was a trend for advisors who promoted PA to do more personal moderate and vigorous PA themselves. Thematic analysis of qualitative interviews with 11 advisors who promoted PA revealed further information about pros and cons of promoting simultaneous multiple-health behaviour change; how high internal validity PA in cessation; timing of multiple changes; dietary changes during cessation; and the training needs of advisors. There is scope to translate these findings into the training of smoking cessation advisors and we recommend strategies to increase positive self-efficacy, outcome efficacy and pro and con beliefs related to PA promotion.

This study was conducted while the first author was at the University of Exeter. Supported by MRC Reference: G0501296.

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POS3-16 TARGETING INTERACTIVE HEALTH COMMUNICATION: URBAN AFRICAN-AMERICANS’ PERCEPTIONS AND PREFERENCES OF WEB-BASED SMOKING CESSATION CONTENT

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Background: Smoking prevalence among urban African-Americans (AA) remains unnecessarily high. Work, transportation, childcare, and co-pays present practical constraints in utilizing some cessation programs; and may contribute to their difficulties. Web-based smoking cessation interventions may be of the potential to break these barriers and have shown effectiveness. Urban AA’s web use has greatly increased. However, AAs in general are not using web-based smoking cessation interventions in numbers comparable to other groups (e.g., Caucasians). Objective: The current study examined perceptions of the Internet for smoking cessation and user preferences of web-based cessation content among urban African American smokers.

Methods: Six 2-hour focus groups to assess perceptions and 3 focus groups to gather user preference while interacting with websites were conducted (4-12 participants) and audio-taped with a total of 56 smokers (AA, 18 female 38 male; mean education high school; mean age 44; mean cdpd 50) in a large U.S. city. Interviews were transcribed verbatim. Coders utilized consensus analytic procedures.

Results: Respondents had little knowledge of web-based cessation interventions, reporting online access would be useful and they would consider using to the web for cessation. Websites with information explicit to quit smoking vs. a lifestyle site would be quit smoking messages more preferred. Web components streaming testimonials from current, past, and/or smokers with a smoking-related illness/disease, bold colors, and dynamic graphics were preferred over predominately text based sites. There was a preference for information tailored to and to AA people and community as well as for diverse information (e.g., financial, housing, and education resources, social support, spirituality). Lastly, respondents wanted a website to use at their own pace based on cessation needs.

Conclusions: In targeting web-based smoking cessation content to urban AA smokers, websites should be creative, highly interactive with audio/images, including generational and community specific information explicit to smoking cessation and a wealth of additional resources.

Prevent Cancer Foundation.

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POS3-17 COMMUNICATING HEALTH RISKS: AFRICAN-AMERICAN LIGHT SMOKERS’ PREFERENCES ABOUT BIOMARKER FEEDBACK FOR SMOKING CESSATION

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Background: With the prevalence of light smoking (? 10 cigarettes per day) among African-American (AA) smokers at 50%, finding effective health risk communication strategies for smoking cessation within this population is critical. Despite smoking fewer cigarettes per day compared to other groups, AAs have higher cessation levels, are less susceptible to smoking, and disproportionately experience more smoking-related diseases. One strategy to increase cessation rates among AA light smokers is to provide biomarker feedback documenting exposure to tobacco-specific carcinogens. Little is known about biomarker feedback as a risk communication strategy among AA smokers.

Objective: The current study examined knowledge, attitudes and beliefs about the risks of smoking among AA light smokers in the United States and their preferences for receipt of biomarker feedback documenting exposure to tobacco-related toxins. Methods: Five focus groups were conducted and audio-taped with a total of 50 smokers (AA, 52% female; mean age = 45 years; mean cdpd = 9) from a Midwestern city in the US. Interviews were transcribed verbatim. Three coders conducted deductive coding using comparative data analysis procedures.

Results: Generally respondents had limited knowledge about the cotinine, carbon monoxide or NNAL, a tobacco specific carcinogen. When participants were educated about these tobacco-specific biomarkers, they expressed an interest in receiving access to this information and reported that receipt of biomarker feedback would motivate interest in smoking cessation. Participants recommended that biomarker feedback be provided to them using a bar chart presented in dynamic colors. Overall, participants wanted a combination of visuals (e.g., text and bar chart) with information explicit to tobacco-related illness/disease, harms of secondhand smoke to family. Preferred delivery of feedback was in the context of support groups and through discussions with their primary care provider. These findings fill a gap in the literature on the potential use of biomarker feedback among AA light smokers. We can inform the development and delivery of biomarker risk communication to AA light smokers.

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POS3-18  THE RELATIONSHIP OF DEPRESSION AND STRESS TO SMOKING IN PREGNANT WOMEN WITH MEDICAID INSURANCE

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Aim: Smoking during pregnancy is the single most modifiable risk factor of poor birth outcomes. Thus, smoking cessation during pregnancy is an important public health goal. The present study examined perceived stress, depressive symptoms, depression history and other demographic and smoking characteristics among a sample of Medicaid-eligible pregnant women.

Methods: Data for this study were derived from a research database that included risk screener data from a convenience sample of 2,203 pregnant Michigan women who were eligible for Medicaid insurance and referred for risk screening to a community-based program certified to deliver enhanced prenatal services. Data were collected from February 2005 to October 2007 during interviews with trained prenatal staff during their first prenatal visit. Women in the sample were classified into the three categories: non-smokers, quitters (quit since finding out pregnant), and continuing smokers. Smoking was assessed via the Edinburgh Postnatal Depression Scale (EPDS) and Stress using the Cohen Perceived Stress Scale. Ed risk screener data from a convenience sample of 7,003 pregnant Michigan women who were eligible for Medicaid insurance and referred for risk screening to a community-based program certified to deliver enhanced prenatal services. Data were collected from February 2005 to October 2007 during interviews with trained prenatal staff during their first prenatal visit. Women in the sample were classified into the three categories: non-smokers, quitters (quit since finding out pregnant), and continuing smokers. Smoking was assessed via the Edinburgh Postnatal Depression Scale (EPDS) and Stress using the Cohen Perceived Stress Scale. For each category of smoking, the percentage of women with depression history and stress, were each highly predictive of being a quitter or being a smoker versus a non-smoker. To disentangle the effect of current depression from depression history and stress, including all three at the same time in a multivariate logistic regression, we found that for quitters vs. non-smokers, only mental health history is independently associated (OR=1.42, p<0.02). For smokers vs. non-smokers, current depression, history of depression, and stress were each highly predictive of smoking. For example, the ratio between the probability of being a smoker and the probability of being a non-smoker was twice for the women with mental health history compared to women with no history (OR=2.2, p<0.01). For those smoking versus quitting stress predicts higher odds of continuing to smoke (OR=1.43, the odds of smoking among stressed women was 43% higher than among the other women). Additionally, we found a strong, meaningful, and highly statistically significant relationship between EPDS score and nicotine dependence.

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POS3-19  EVALUATION OF SMOKEFREE.GOV: A NATIONAL WEB-ASSISTED TOBACCO INTERVENTION

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Background: Recent national surveys estimate that 75 percent of Americans use the Internet and that over 10 million people searched online annually for information about quitting smoking. In response to this, web-assisted tobacco interventions (WATI) have proliferated. However, evaluation of WATIs are needed to ensure that they are an effective information tool for people trying to quit smoking. As part of ongoing quality control efforts, after site updates, the National Cancer Institute (NCI) of the United States performs evaluations elicited from users of smokefree.gov, NCI’s WATI site. The data are used to assess whether modifications of smokefree.gov were more or less effective than prior versions of the site.

Methods: An online baseline survey was performed in 2003 with a follow-up survey completed in 2008. Each survey was completed by 1,000 Smokefree.gov visitors. The survey assessed smoking behavior, satisfaction with, and attitudes towards the site, various site features, as well as demographic questions. Qualitative and quantitative data were analyzed.

Results: The baseline survey revealed that approximately 86 percent of respondents smoked daily with an average of 23.2 cigarettes per day. Most respondents were White females between the ages of 20-50 years with nearly half reporting at least some college. Over 75 percent reported that their main reason for visiting the site was to seek smoking cessation information for themselves. Individuals were most interested in information specifically focused on cessation, including new and most effective methods. Consistent with this, the preferred method of receiving health information for these respondents was through electronic communication, such as email. Trends and variations from the follow-up are reported.

Conclusions: Although traditional underserved populations were not reached, our results suggest that WATIs appear to continue to reach smokers with markers of higher risk of smoking cessation dependence across a 5-year time span. Implications of changes and consistencies in WATI use are discussed in the context of message framing, promotion and tailoring of site tools.

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POS3-21  SECOND-HAND SMOKE EXPOSURE IN HOMES AND IN CARS AMONG CANADIAN YOUTH: CURRENT PREVALENCE, BELIEFS ABOUT EXPOSURE, AND CHANGES BETWEEN 2004 - 2006

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Objective: To examine second-hand smoke (SHS) exposure and the beliefs youth have about being exposed to SHS in their homes and in cars.

Methods: Nationally representative data from the 2006 Youth Smoking Survey (YSS) were used to examine youth exposure to smoking and beliefs about smoking in the home and car among 71,003 Canadian youth in grades 5 to 12. Gender specific logistic regression models were conducted to examine if being exposed to smoking at home or in the car were associated with the beliefs youth have about either smoking around kids at home or smoking around kids in cars.

Results: In 2006, 22.1% of youth in grades 5 to 12 were exposed to smoking in their home on a daily or almost daily basis and 28.1% were exposed to smoking while riding in a car at least once in the previous week. The majority of youth reported that they do not think smoking should be allowed around kids at home (86.3%) or in cars (88.4%). Youth exposed to smoking in the home or in cars reported missing substantially more days of school in the previous month because of their health compared. Among both male and female youth, being an ever smoker, living in a house where someone smokes inside daily, and having ridden in a car with someone who was smoking cigarettes in the past seven days were all associated with being more likely to report that smoking should not be allowed around kids at home or in cars. However, unlike males, female youth with at least one parent who smokes were more likely to report that smoking should not be allowed around kids at home or in cars.

Conclusions: These results highlight that Canadian youth are frequently exposed to SHS in their homes and in cars despite the fact that the vast majority of youth do not think smoking should be allowed around kids in those locations. Considering the health and social consequences associated with SHS exposure, it may be a timely opportunity to move forward with programs and policies designed to prevent individuals from smoking around youth in these locations.

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POS3-22  THE IMPACT OF SMOKELESS TOBACCO USE ON CIGARETTE SMOKING OUTCOMES

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The objective was to examine effects of smokeless tobacco (ST) use on cigarette use outcomes. We hypothesized that dual users of ST and cigarettes had worse outcomes including early initiation of smoking and nicotine dependence (ND) as well as delayed full ND remission and smoking cessation across the lifespan. We selected snuff and chewing tobacco users among 18,013 lifetime smokers from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) conducted by the NIAAA in 2001 through 2002. Cox regression model was used to estimate the hazard ratios between dual users versus cigarette users regarding their age of onset of the first full cigarette, ND, full remission from ND, and smoking cessation, after controlling for demographic variables and psychiatric disorders. The results suggested that dual users of snuff and cigarettes had greater hazards to start smoking earlier [HR=1.19(1.12-1.27)], develop ND earlier [HR=1.50 (1.37-1.64)], delay full remission from ND [HR=1.56 (1.37-1.79)], and quit smoking later [HR=1.12(1.05-1.18)]. In conclusion, ST use worsens cigarette-smoking outcomes. This relationship is partially mediated by psychiatric disorders.

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POS3-24
THE EFFECTS OF PHYSICIAN ADVICE ON ADOLESCENT SMOKING
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Physician advice for smoking cessation is a simple but effective intervention for adult smokers, producing 1-3% increases in adult cessation above unassisted quitting rates of 2-3%. Despite the promise of this research with adults, few studies have examined the impact of physician advice on teens that smoke. This is the purpose of the present report, using data from the Memphis Health Project. Participants included approximately 5,000 adolescents, most measured during the 11th grade. Students were asked to report both whether they had been asked about tobacco use by a physician and whether the physician had advised them not to smoke. In addition, teens were asked about their attitudes toward smoking and their knowledge of tobacco-related disease. Results indicated that teens who smoked were more likely to have been asked and advised to quit by a doctor, p<.001. These findings suggest that physicians are skilled at directing their questions toward teens that are at risk for smoking. Teens that were asked about smoking were different from their peers in a number of other respects. For example, those who were questioned were less likely to believe smoking would make them look cool, p<.01, or popular, p<.001, than unscreened adolescents. Teens that were screened also had more accurate knowledge of the dangers of smoking, p<.02. Most importantly, screened adolescents made more quit attempts, p<.01, than youth who were not asked about smoking. Adolescents who were advised by their doctor not to smoke were also less likely to believe smoking would make them look cool, p<.001, popular, p<.001, or mature, p<.001, than those who had not been advised. Moreover, teens that had been advised about tobacco use were more knowledgeable about the health consequences of smoking, p<.05. These results suggest that physicians’ questions about tobacco use and advice not to smoke may help adolescents to become more knowledgeable about the hazards of tobacco and to resist social myths about the potential benefits of smoking. In addition, physician screening may increase the odds of quitting for adolescent smokers.

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POS3-25
SECONDHAND EXPOSURE AND DEPRESSION IN THE UNITED STATES: IMPLICATIONS FOR TOBACCO POLICY

It is well established that smoking is associated with depression. The possible explanations for this association include: (a) smoking precedes the onset of depression, (b) depression precedes smoking (self-medication hypothesis), or (c) a third factor that relates the two. However, nothing is known with regard to how secondhand smoke exposure may be related to depression. The objectives of the research study were to examine several potential factors related to secondhand smoke exposure, home and workplace smoking rules, and depression in two nationally representative samples of United States non-smoking adults. Data were obtained from the 2006 Behavioral Risk Factor Surveillance System (BRFSS) and the 2005-2006 National Health and Nutrition Examination Survey (NHANES). The Patient Health Questionnaire was used to measure current depression; secondhand smoke workplace policies and smoking rules in the home were determined by self-report (BRFSS); secondhand smoke exposure in the NHANES was determined by respondent’s serum cotinine level categorized as high (0.2-15 ng/mL), low (above the detection limit 0-2 ng/mL), or undetectable (below the detection limit). Logistic regression analyses were performed with adjustment for survey design, comorbidity, age, race/ethnicity, gender, socio-economic status, and alcohol consumption. Our findings indicated that persons living in homes where smoking was allowed anywhere were significantly more likely to be depressed with an odds ratio (OR) = 2.09 [95% confidence interval = 1.36-3.20], as were persons working in jobs where smoking was allowed in public places (2.09 [1.03-4.42]) and in work areas (2.59 [1.39-4.80]). Likewise, current depression was associated with greater exposure to secondhand smoke as measured by serum cotinine (2.42 [1.15-5.08]). Similar to firsthand smoking, it is possible that secondhand smoke exposure may have an effect on the dopamine system, which has been related to depression. Therefore, to prevent depression and other negative health outcomes, individuals may choose to implement home policies as well as having effective workplace policy regarding tobacco-smoking behaviors.

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POS3-26
LOW SES SMOKERS CAN QUIT: WHO QUILTS AND REMAINS ABSTINENT SIX MONTHS POST INTERVENTION
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We examined the results of 176 smokers who attended an outpatient smoking cessation program offered at a county hospital from July 2005 through June 2007. Smokers had enrolled in a 6-session behavior-based, cognitive change intervention at San Francisco General Hospital (SFGH); SFGH is an urban, public hospital that serves an ethnically diverse, low socioeconomic patient population who are uninsured or under-insured. The program consisted of 6 weekly, two-hour sessions accompanied by one support telephone contact between sessions, i.e., a total of 12 contacts per participant. Free medication was not offered to smokers. However, staff assisted smokers with health coverage through the pre authorization process to access cessation aids. Results: Smokers who attended the program were more likely to have been referred by their health care provider than self-referral. Multiple approaches to quitting were used by smokers to quit (i.e., medication, tapering, acute withdrawal, etc.). Quit rates were based on the participants completing an in-person pre- and post-test. Follow up was conducted by telephone at 1, 3, and 6 months post intervention. Of the 176 enrollees, 105 quit smoking. The results were based on attendance at 2 or more sessions, or those who received at least 33% of the intervention. More men attended the program than woman (55% compared to 36%). The ethnic breakdown was close to 50% African American and Caucasian. Of the 176, 78% (138 of the 176) had quit smoking. Men’s quit rates exceeded the rates for women: 36% to 22%. Caucasian men’s quit rates were higher than the quit rates for African American men (55% compared with 35%) yet more African American women quit than did Caucasian women (47% to 32%). Ninety-six (96%) percent of all smokers who quit used a nicotine patch. At the six-month follow-up we were able to reach 82% of the participants. Of those who quit at the posttest, 52% sustained abstinence. Fifty five percent (55%) of smokers who quit at the posttest and sustained quitting at the 6-month follow-up used a nicotine patch to quit. Funding for this research was received from the USA Master Settlement Funds.

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CAMPUS POLICY IN AN IRISH TEACHING HOSPITAL

Using Tobacco Industry Market Research to Understand Cigarette Use Among College Students

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Background: Using strategies from tobacco industry market research may inform the design of effective public health efforts to reduce smoking.

Objective: To examine smoking behavior among market segments of college students (per psychographics including interests, lifestyle, attitudes, etc.).

Methods: Data from an online survey of college students including demographics, psychographic variables from tobacco industry surveys, and health behaviors (smoking, drinking, exercise) was examined through cluster analysis.

Results: The response rate was 27% (801/3,000), 32.1% smoked cigarettes in the past 30 days, and 9.5% regularly smoked (≥25 of past 30 days). Analyses identified 4 segments. (1) The Play-It-Safe’s (30.5%) were most likely to be female (85.1% vs. <82.0% in other groups), are guarded in social situations, and are unlikely to be thrill-seekers. They had a 30-day smoking rate of 32.0% but a low rate of regular smoking (6.1%). (2) The Traditional Intellectuals (19.2%) value intellectual satisfaction in intimate relationships, prefer sex after marriage, and are observers in social situations. This group had 30-day smoking prevalence of 28.3%. (3) The Thrill-Seeking Socializers (30.8%) include a high rate of underclassmen (57.1% vs. <40.0% in other groups) and are thrill-seekers. This group had the highest rate of past 30-day smoking (41.6%) and regular smoking (13.7%) and the highest rates of going to a bar or party, exercising, dieting, and drinking alcohol. (4) The Quiet Intellectuals (19.6%) are observers at parties and have more depressive symptoms. They had a 30-day smoking rate of 20.9% and had the second highest regular smoking rate (9.5%). After controlling for gender in multivariate analysis, segment was a predictor of 30-day point prevalence of smoking (p<0.01).

Conclusions: Given the different characterizations of lifestyle and health behaviors among college students, cessation programs could consider tailoring to segments of students in addressing tobacco use.

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EVIDENCE FOR IMPLEMENTING A SMOKE-FREE CAMPUS POLICY IN AN IRISH TEACHING HOSPITAL

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Ireland became the first country in the world to ban outright indoor smoking in public places in March 2004, however healthcare facilities continued to allow outdoor smoking at a varying rate. Smoking healthcare facilities have been implemented in other countries, particularly in the United States, and when England and Wales introduced their national ban in July 2007, some healthcare facilities also extended this to the total site, with mixed results. Successful implementation takes careful and concerted planning and this paper describes the evidence for implementing an outright site ban at St. Vincent’s University Hospital in January 2009. Surveillance data on patient and staff smoking rates had been recorded regularly since 1997. Between 1997 and 2006 current smoking rates ranged from 16% to 25%, somewhat lower than the national average. Staff smoking rates fell from 28% to 18% but intention to quit by smoking staff also declined, from 72% to 50%. In 2006, overall support for the original 2004 legislation reached 94% in staff, and 52% of staff and 59% of patients agreed with the proposal to implement an outright site ban, with 75% staff agreeable to supporting it if implemented. Observational data confirmed that the majority using the shelters were smoking in small and scattered groups of patients. Viewed as mixed among smoking patients but staff was concerned about the practice of patients leaving the ward to smoke outside for a variety of logistical reasons, including personal patient safety. The intention to implement a ban from January 1, 2009, was formally announced in May 2008 and inter-disciplinary steering and implementation groups were established. The main consideration was the careful review of success stories when previous attempts to implement a total site ban were mixed. A training programme based on hard case scenarios was developed for staff. The balance of carrot and stick policy is critical to the success of the total ban.


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ARE GREEK-CYPRIOT ADOLESCENT SMOKERS MOTIVATED TO QUIT?

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In Cyprus, prevalence of smoking appears high among both adults and adolescents. However, no data have been available so far on smoking cessation intentions and correlates in the Greek Cypriot population. In the context of a nationwide study of smoking in Greek-Cypriot adolescents (N = 1535, Mage = 15), we investigated motivation to quit among the smokers of the sample (272 smokers, 98 female, mean age 16, range 12-19 years). Participants responded to self-completion questionnaires, which included questions about their smoking behavior, knowledge, attitudes, and intentions. Previous research indicated that young people with higher educational aspirations, and higher levels of knowledge about the harmful effects of smoking were less likely to smoke. In this study, we further examined whether such variables relate to smokers’ motivation to quit. A significant percentage of the students (43.6%, N = 119), stated they would like to receive support from their family, friends, and peers when considering quitting. No funding.

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THE DEVELOPMENT OF THE VETERANS AFFAIRS TOBACCO TACTICS CAMPAIGN

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Novel and strategic campaign strategies are needed to compete with the enticements produced by tobacco advertisers. Advertisers know that pictures speak louder than words. Hence, social marketing techniques were used to develop the image-based Veterans Affairs (VA) Tobacco Tactics program logo and campaign character. Formative evaluation of the Tobacco Tactics logo and campaign character was conducted by three rounds of comprehension surveys. A further graphic design firm was hired to illustrate the logo and character for the Tobacco Tactics program first by drawing thumb sketches. Then successive, colorful iterations were developed based on consumer feedback from veterans, their family members, and staff at the Ann Arbor and Detroit VAs. Initially, over 37% of participants chose the target logo as their first choice over a boot stomping a cigarette, an eagle punching a cigarette, and a cigarette butt (N=72). Staff were more likely than patients to think the target logo gave a violent message (p<0.05) which may be problematic for veterans with post-traumatic stress disorder. About 27% preferred the eagle logo because it represented America, but others thought it looked aggressive and did not want us to “mess with this” American symbol. Based upon this feedback, four animal and four human military-type, cartoon characters were illustrated. Approximately 36% preferred the bulldog compared to the bear, gorilla, and lion. Nearly 70% preferred the drill sergeant compared to the other 3 military-type characters (N>20). While the bulldog and drill sergeant were viewed as strong and tough, 61% preferred the drill sergeant and 34% preferred the bulldog (N>55). However, several veteran participants stated that their drill sergeant told them to “smoke em if you got em”. Hence, the bulldog was chosen as the finalist also in Cyprus. The staff and patients were shown the logo in context and a graphic logo photo was shown to be highly successful. Creative artistic design, followed by both qualitative and quantitative consumer feedback, is essential in the development of compelling health campaigns that avoid alienating segments of the target population. This study was conducted while the first author was the Ann Arbor VA Center for Clinical Management Research Health Services Research & Development. This study was supported by the Department of Veterans Affairs 2007 Combined Grant Award Program.

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POSS-31 NATIONWIDE GROUP CESSATION PROGRAM FOR ADULTS: WHICH TARGET GROUPS CAN BE REACHED AND HOW CAN THEY BE REACHED?

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Introduction: An updated version of the German smoking cessation program “Das Rauchfrei – Programm” has been introduced in 2007. It comprises six group sessions and is based on cognitive behavioural therapy and includes booster telephone counselling. Aim of the study was to describe the target group of the program and compare it with the target group of the previous program version and monitor the recruitment.

Methods: From May 2007 until April 2008, 2,560 participants were questioned at the beginning of the program. The program was delivered by skilled trainers in different outpatient settings (institutes for health education, factories, medical practices) all over Germany.

Results: 51% of participants are female, the average age is 47 years, they smoke 24 cigarettes in an average, and 66% smoke their first cigarette within 30 minutes after waking up. Participants were recruited mostly via their work place (42%) and their insurance companies (13%), rarely via Internet (3%) or telephone helpline (0.1%).

Conclusion: Female smokers are still overrepresented in the SCP, but male participants catch up as more SCPs are run in factories. The marketing of the program should try to target smokers in the age between 20 and 40 years. The most successful way to recruit participants is achieved through work place initiatives.

No funding.

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POSS-32 USE OF NICALERT TO MEASURE SMOKING STATUS AND SHS EXPOSURE IN A PRE-ADOLESCENT SCHOOL POPULATION

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Aim: To biochemically validate pre-adolescent self-report of tobacco smoking/ exposure to smoke (SHS) using NicAlert cotinine test strips. Keeping Kids Smokefree, a quasi-experimental intervention trial, aims to change smoking behaviour and attitudes of parents of intermediate school children (Yr 7/aged 11, Yr 8/aged 12). Parents and students of 4 schools (in lower socio-economic areas) with mainly Pacific Island and Maori students were surveyed at study entry. Parental consent for 802/2,265 (35.4%) students was obtained to do a NicAlert test. Parents were asked: ethnicity, smokers in the home, smoking in the home and car. Students were asked if family members and their best friend smoked, exposure to smoking in the home or car in previous 7 days. Only 34% of students scored 0 (<10ng/ml cotinine); 66% students tested positive (10 or more ng/ml cotinine). No significant associations were found between NicAlert score and child’s reported smoking status, parental report of smokers resident in the home, smoking occurring inside the home or car; or students report of exposure to smoke in their home or car in the previous 7 days (P>0.05). Specifically analysis supported that NicAlerts are useful for identifying students who don’t currently smoke or who have no/low SHS exposure (0.83). NicAlert scores varied by age and gender with positive test increasing with age (P=0.002) and girls were more likely to test positively than boys (P=0.021). There was a significant difference by school.

Conclusion: NicAlert tests are good for identifying children who don’t smoke/are not exposed to SHS, but they do not distinguish well between children who actively smoke and those who may be exposed to moderate-high levels of SHS. Cotinine was present in children regardless of self or parental reports of SHS exposure. That cotinine levels increase with age, varied by gender and across schools suggests that SHS exposure varies among the sub-cultures children live and play in and that SHS exposure is high in environments other than inside the home and car. The results suggest a need to query SHS exposure outside the home, on the way to/from school and in children’s social environments.

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POSS-33 QUITTERS’ USE OF PHYSICAL ACTIVITY AS A SMOKING CESSATION AID, AND ASSOCIATED VARIABLES: SUPPORT FOR THE TRANSTHEORETICAL MODEL

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Short bouts of moderate intensity physical activity (PA) (e.g., brisk walking) can reduce cravings and regulate mood during smoking abstinence and thus may have a useful role to play as a smoking cessation aid. There is, however, a lack of research into the extent to which quitters naturally use PA as an aid and the factors that may be related to its use. Within the current study, we aimed to: (1) determine the extent of quitters’ past and current use of PA as an aid to quitting; and (2) examine the cross-sectional relationship between the stage of readiness to use PA, specifically as a cessation aid, and quitter characteristics and cognitions, within the framework of the Transtheoretical Model (TM). Self-report surveys assessing the use of PA to control smoking, TM variables, general PA levels and demographics were completed by 181 quitters, attending NHS Stop Smoking Service clinics in England and Scotland. The sample was 65% female, 93% Caucasian, 53% manual workers or unemployed, and had a mean age of 43.6 years. 84% had previously tried quitting smoking, and 71% had previously had at least one quit attempt. Within the current quit attempt, 22% reported using PA as an aid, and a further 11% were planning to. Those in pre-contemplation and contemplation stage of readiness for using PA as a cessation aid (67%) held less positive beliefs surrounding self-efficacy and outcome efficacy, and rated their health as worse, compared with those who were currently using PA as an aid. The findings support the idea that there is considerable client interest in the use of PA as an aid, but further promotion of this behavioural strategy, for management of weight gain and cravings, is needed. Within the TM framework, there is support for PA promotion strategies that aim to enhance self-efficacy and outcome efficacy beliefs regarding PA as a cessation aid.

This study was conducted while the first author was at the University of Exeter. Supported by MRC Reference: G0501296.

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POSS-34 TOBACCO VENDOR COMPLIANCE: DOES BAD BEHAVIOUR LEAD TO MORE BAD BEHAVIOUR?

Jolene M. Dubray, M.Sc., and Robert M. Schwartz, Ph.D., Ontario Tobacco Research Unit, University of Toronto

Youth access restrictions have been enforced since the mid 1990’s in the province of Ontario, Canada. Despite the long history of enforcing the youth access restrictions, compliance has peaked at 90%. On May 31, 2006, Ontario implemented the Smoke-Free Ontario Act (SFOA) that included six new restrictions on point of sale promotions in which tobacco vendors would also have to comply. The purpose of this study was to assess whether tobacco vendor non-compliance with the youth access restrictions was associated with non-compliance with the point of sale restrictions. Data for this study was collected during two post-SFOA compliance surveys. Approximately 1,575 tobacco vendors were randomly selected for each survey. Each regionally stratified sample included equal numbers of tobacco vendors categorized into four trade classes; chain convenience, independent convenience and discount, gas stations, and grocery. Compliance for the youth access and point of sale restrictions was assessed by local public health agency enforcement staff using standardized protocols and inspection forms. Weighted estimates were attempted for vendor compliance with the youth access and point of sale restrictions. Logistic regression was conducted to assess the relationship between tobacco vendor non-compliance with the youth access and point of sale restrictions. Overall, 11% of tobacco vendors were non-compliant with the youth access restrictions. Similarly, 11% of tobacco vendors were non-compliant with one or more of the six point of sale promotion restrictions. This study demonstrated that tobacco vendors who were non-compliant with youth access restrictions were not the same tobacco vendors who were non-compliant with the point of sale promotion restrictions. The nature of the restrictions may explain the lack of relationship between tobacco vendor non-compliance, as youth access is an action of selling tobacco to a minor and point of sale promotion is a physical presence in the store.

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**POS3-35 DEVELOPMENT OF A LABORATORY BASED ANALYSIS SYSTEM FOR ESTIMATION OF SNUS CONSTITUENT EXTRACTION BY USERS**

Kevin G. McAdam, Ph.D.,* and Helena Digard, B.Sc., British American Tobacco

**Introduction:** Measuring the amount of snus constituents extracted by consumers during use contributes valuable information towards an understanding of the levels of exposure, intake and biological consequences of snus use. Conventional approaches such as clinical testing for biomarkers, or controlled user testing, comparing levels of constituents before and after use, are both associated with a number of practical limitations. These limitations include a lack of biomarkers for many constituents, and slow, expensive testing procedures. Another potential approach is the use of a routine laboratory analysis system, which could provide a robust and reproducible means of comparing different products across a range of constituents. However, as demonstrated with machine-based smoking engines, no single set of experimental conditions can reproduce the range of behaviours displayed by different users when using tobacco products. Nevertheless, for cigarette smoking, machine-based laboratory approaches remain indispensable in providing comparative information about the chemical content and potential for exposure from cigarettes. Similarly, for smokeless products such as snus, the self-effacing and self-regulating behaviour displayed by users can have significant bearing on terms of understanding the potential for chemical exposure and other differences between snus products.

**Results:** The development of this laboratory approach has been guided by human extraction data on a wide range of constituents, obtained over a typical 60-minute extraction period. A number of potential laboratory approaches have been explored. Simple immersive extraction has been shown to over-extract constituents compared to human behaviour. A review of model mouth systems highlighted the range of approaches that have been developed for the food industry, and identified a Franz cell as a plausible approach for this development. A Franz cell was physically modified to make it appropriate for snus extraction. The importance of extraction time, temperature and pressure were evaluated, and the relevance of saliva, both real and artificial, to the accuracy of extraction values is discussed.

The study was funded by British American Tobacco.

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**POS3-36 WILL LONG-TERM CARE RESIDENTS USE FREE NRT?**

Louise Walker* and Peter Selby*:*Centre for Addiction and Mental Health;
University of Toronto, Ontario Tobacco Research Unit

**Introduction:** Infirm seniors often reside in long-term care (LTC) facilities. Historically, these individuals are less likely to be counseled about smoking and quitting and less likely to be prescribed pharmacotherapy for quitting.

**Purpose:** To determine how LTC residents in LTC homes would be receptive to quitting if nicotine replacement therapy (NRT) was readily available free of charge.

**Method:** In the project’s first year, LTC homes submitted receipts to be reimbursed for the cost of NRT for residents. The next year, the process was simplified so that, once registered, homes could fax the order directly to the project. Project staff packaged the NRT and couriered it directly to the home. We requested that homes indicate the total number of residents, the number of smokers, and the initial, sex, and date of birth of those residents prescribed NRT.

**Results:** When LTC homes were offered NRT without up-front costs, 86 homes participated, a 140-fold increase over the previous year. Orders were placed for 111 residents, which accounts for 25% of smoking residents. All three dosages of the nicotine patch, the 2 mg nicotine gum, and the nicotine inhaler were ordered.

The age of residents receiving NRT ranged from 27 to 97, with the mean age of 73. Of those who received NRT, 51% were male, 47% female, and 2% had missing data.

**Conclusions:** LTC residents are interested in using NRT for quitting or reducing tobacco use. Making NRT more accessible by removing the cost barrier greatly increased the number of older adults who used these products to quit or reduce their cigarette consumption.

**Ontario Ministry of Health Promotion.**

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**POS3-37 ACADEMIC ENABLERS: AN INVESTIGATION INTO THE COMPONENTS OF COLLEGE STUDENT SMOKING AND DRINKING**

George B. Mitzner* and Khatidja S. Ali, M.A., University of Memphis

Researchers from a variety of disciplines have long converged on the subject of college student health behaviors. Recent findings have illustrated an increase in problems related to alcohol consumption. In addition, the tobacco industry has continued to employ aggressive marketing tactics geared towards college students. Taken together, a focus on this population is warranted. The present review utilizes four frequently implicated constructs — demographics, psychosocial features, intrapersonal variables, and the university environment — to identify factors that protect or put at-risk today’s college student. This literature review is based on a total of 77 studies that examined the above-mentioned constructs — relating to cigarette and alcohol use. The studies were identified by conducting a thorough search of Psycholinfo, PsychArticles, and Medline using groupings of search terms, such as cigarette smoking, alcohol, college, risk factors, and peer groups. The search was limited to journal articles, books, and dissertation studies published in English. Though majority of results are drawn from cross sectional research, several conclusions from longitudinal studies were integrated. As expected, protective factors such as self-efficacy and religiosity were shown to protect against both cigarette smoking and alcohol use. In addition, both of these factors predicted treatment success. Interestingly, risk factors for smoking and alcohol use were more varied. Temporaneous characteristics, such as sensation seeking, impulsivity, and non-conformity have consistently been associated with binge drinking and alcohol problems. However, risk factors for smoking included mood and affective correlates. Students with low levels of life satisfaction were documented as being more vulnerable to nicotine dependence. These data suggest that in addition to designing substance-specific treatment programs, prevention efforts should likewise target protective factors.

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**POS3-38 EFFECT OF SMOKING PORTRAYAL IN MOVIES ON CRAVING AMONG SMOKERS**

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The objective of the present study is to test the influence of smoking portrayals in movies on smokers’ desire to smoke. Studies examining the effect of cue exposure on cigarette craving among smokers have shown that environmental cues are important triggers for craving. Smokers who are exposed to smoking-related cues show increased craving compared with exposure to neutral cues. These effects have been shown across a variety of modalities, but smoking cues in movies have never been subject of such a research. We hypothesized that smoking portrayals in movies would also affect craving in smokers. Using an experimental design, we exposed 65 young adults that smoke on a daily basis, to a segment of a movie in which the main characters either smoked or not. To create a naturalistic setting, we equipped a lab with a comfortable leather chair and a big screen. In the experimental condition, the participants were confronted with a segment of the movie in which the main characters smoke. We removed the smoking scenes from the movie segment used in the control condition. We tested whether smokers who are confronted with smoking characters have a greater desire to smoke than smokers confronted with non-smoking characters. The main outcome measure is craving, measured with a visual analogue scale. There were no differences found in craving between smokers who were exposed to smoking cues and smokers who saw the same movie without smoking scenes. This finding was not affected by baseline craving, the time of the last cigarette smoked, and daily smoking habits. In conclusion, no effect of smoking cues in movies on craving was found in this study, in contrast with research supporting the cue-craving link. Many of these studies are characterized by an explicit and strong focus on smoking cues. Possibly, the strength of smoking cues in movies was insufficient to affect craving in daily smokers. Alternatively, this outcome could be due to the particular types of smoking cues, which are embedded in the context of a storyline. Thus, if replicated, this might indicate that smoking cues in such contexts are less strongly affecting smokers’ desire to smoke than expected.

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Introduction: In New Zealand, 42% of cigarettes smoked are roll-your-own (RYO). Little is known how RYO smoking patterns and potential toxicity exposure differ from factory-made (FM) smoking. Aim: To compare RYO-FM smoking patterns and immediate toxic effects.

Methods: Addicted overnight-abstinent males smoked 4 cigarettes half-hourly for 3 hours in the morning. RYO or FM according to usual habit. Smoking pattern by Cress Micro flowmeter, cigarette weight, cravings, expired CO and salivary cotinine were measured.

Results: 26 RYO, 22 FM smokers smoked 19.0 and 17.4 daily respectively (p<0.45). Time to first cigarette was lower in RYO smokers (6.1 minutes, 8.6 mins, p=0.113); first cigarette tobacco weighed less (0.45 g, FM 0.71g, p<0.001); less tobacco was burnt (0.36 g, FM 0.55 g, p<0.001) but smoking patterns were no different. Subsequent cigarettes (all Holiday brand), however, were smoked more intensively by RYO smokers, who inhaled 28% more smoke per cigarette (RYO 952 mL, FM 743 mL, p<0.023); took 25% more puffs (16.9, 13.6, p=0.035); puffed longer (28, 22 seconds, p=0.012) per cigarette, taking similar puffs (57, 59 mL). Over four cigarettes cotinine levels (171, 164 ng/mL, p=0.47), alveolar CO boost (13.8, 13.8 ppm), and craving reduction (53%, 52%) were different. RYO excise was 46% less per cigarette.

Conclusions: RYO smokers inhale more smoke than FM smokers. No immediate difference in CO or cotinine was detected. Tobacco packaging should state that RYO does not reduce risk and may increase it. Excise rates per RYO cigarette should be no less than for a FM cigarette, to reflect the parity of risk.

Health Sponsorship Council of New Zealand.

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Over 20% of adults in the U.S. presently smoke cigarettes. The highest rates (28.5%) are among 18-24 year-olds. Therefore, cessation interventions targeting young adults are needed. Despite extensive efforts and maintained abstinence, young adult smokers who have been associated with positive social support from others (i.e., “support persons”) throughout the cessation process. Research indicates that nonsmoking females cohabitating with smokers tend to provide more consistent, long-lasting, and positive support than smokers, males, or those not cohabitating with smokers. Support persons’ attributions about smokers may affect the consistency and amount of support they provide to a smoker during a cessation attempt. The present investigation addressed the relationship between support persons’ attribution style and the quality and quantity of support they provided to smokers. College students (N=244) were asked to identify a smoker about whom they were concerned, to report demographic and smoking background information about themselves and the identified smoker, nicotine dependence, perceived positive and negative social support provided, and attributions about their identified smokers’ smoking habits. Participants were predominantly Caucasian (81%), female (75%), never-smokers (70%) in platonic relationships with (91%) and not cohabitating with their smokers (82%). Multivariate analyses of variance (MANOVA) with gender, smoking status (p<.08), relationship type (romantic vs. platonic; p<.07), and cohabitating status as the factors indicated non-significant trends in differences in amount and quality of social support provided. Those romantically involved with their smokers tended to report providing more positive (p<0.05) and less negative support (p<0.07) than their respective counterparts. Compared to never-smokers, smokers and ex-smokers provided more negative support (p<0.06). Regression analyses revealed that external attributions did not predict self-reported positive support and internal attributions did not predict negative support. These findings suggest the importance of relationship factors in the cessation process and highlight the need for future research in this area.

This study was supported by internal research funds from Louisiana State University provided to Amy L. Copeland.

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Current research on the deposition of mainstream smoke (MS) particulate in smokers is insufficient to determine if cigarette configurations, e.g., non-menthol vs. menthol, influence exposure or disease risk. A 9-subject crossover study approved by Battelle and CDC Institutional Review Boards was conducted in which pack/day smokers were randomly assigned commercial menthol or non-menthol cigarettes to smoke ad libitum for one week. They then smoked 4 ciga-

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Background: In community-based smoking cessation trials it is not always feasible to undertake direct verification of self-reported quit status. We tested an inexpensive, and simple to use method for testing saliva and urine samples.

Method: We enrolled smokers from throughout New Zealand, using the national telephone-based Quitline cessation service, into two large cessation trials. In both trials the primary outcome, 7-day point prevalence abstinence at six months after Quit Day, was verified using NicAlert strips posted in a kit for self-administration. In both trials participants were advised that they would go into a lottery for a prize if they completed follow-up. In the second trial, a reminder phone call was made if the strip was not received back at the study centre within two weeks of being posted.

Results: In the first trial, 1,100 smokers were recruited, with 195 (18%) indicating that they had quit smoking at six months. Only 67 (34%) of the returned strips confirmed that the participant had stopped smoking. No reminder call was given in this trial. No difference in the number of strips returned was seen between the intervention groups or according to gender, although there was a trend for age as a factor for age. In the second trial, of the 412 smokers recruited to date, 421 have completed their six-month follow-up. Of this group, 158 (38%) indicated that they had quit smoking. The return rate for the strips is once again low, with only 53 (34%) returned to date, despite one reminder phone call. 22% of returned strips confirmed that the participant had stopped smoking. In both trials the cost of sending out each strip was ~$NZ51.

Conclusion: This verification method is technically feasible, but response rates were low (less than 1/3 of smokers called to be a “non-responder”). Methods to substantially increase response rates are needed for this method to become useful in verifying cessation outcomes in clinical trials.

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POS5-44 FROM THE MISERABLE TO THE HAPPY-GO-LUCKY: A CLUSTER ANALYSIS OF SMOKERS’ CRAVING, MOOD, AND ENJOYMENT ASSESSED IN REAL TIME

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The experimental method used with cigarette smokers tacitly assumes a homogeneous group in terms of craving and mood responses. Although differences among smokers (e.g., age, dependence level) have been noted and topologies have been proposed, it is unknown whether smokers are composed of distinct sub-populations in their response to craving and mood assessment settings. This study examined smokers' n = 66 self-reports of craving, mood, and smoking enjoyment, using hand-held computers, in real time, immediately before and after smoking, and at random times of day. Participants were 51.4% Black, 36.5% White, and 12.1% "other." 46% male, smoked an average of 22 cigarettes per day, had a baseline expired CO value of 23 ppm, an average FTND score of 5.5, carried the hand-held computer for approximately 10 days, and provided an average of 102 assessments. A hierarchical cluster analysis, with Ward's method, was performed on craving, mood, and smoking enjoyment. There were no clusters evident, based on assessment time (before, after, and random), so times were collapsed for each smoker on each dependent measure. Using the grand mean of each dependent measure (across all smokers), a clear three-cluster solution was found based on the smoker group’s deviation from this mean. The first group of smokers (the miserables, n = 34) was characterized by high craving, low mood, and negative mood, but low positive mood. The second group of smokers ("the happy-go-lucky," n = 17) was characterized by low craving and negative mood, average enjoyment, and high positive mood. The third group of smokers ("the non-responders," n = 15) was characterized by baseline means of 0 on four measures. One-way ANOVAs were performed on demographic and smoking variables using cluster group as the independent variable. There were no differences among groups on any of these variables except for FTND score, which was significantly lower FTND score F(2,64) = 6.38, p < .01. Future research is needed to determine whether these three groups are stable in other naturalistic smoking populations, and whether similar clusters emerge in smokers examined in laboratory settings.

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POS5-45 WHO ARE THESE PEOPLE? THE MYSTERY OF NON-RESPONDERS IN SMOKING RESEARCH

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While most dependent smokers are reactive to smoking stimuli, almost every smoker who reports no (or very little) craving or mood responses to smoking stimuli are reactive to smoking stimuli. These "non-responders" report zero (or well below average) values on all assessment occasions, or report no change in craving after exposure to smoking stimuli. Two studies explored characteristics of non-responders. Study One involved 66 participants who were an average age of 43, 52% Black, 39% White, 9% Other, 41% male, smoked 22 cigarettes per day, and had a baseline expired CO of 24 ppm. Participants completed self-report questionnaires during an orientation session as part of an ecological momentary assessment (EMA) study, in which they carried a hand-held computer for approximately 9 days and completed an average of 6 daily assessments. Non-responders (n = 17) were identified through cluster analysis as those with below average EMA ratings on craving, positive and negative mood, and smoking enjoyment. The non-responders were significantly lower than responders in terms of craving and mood as experienced in naturalistic settings. One-way ANOVAs were performed on demographic and smoking variables (including follow-up calls) and no difference was demonstrated and thus these variables may not be useful for predicting non-responders in future studies.

This study was funded by grants from the National Cancer Institute (K07CA92209) to Dr. Carter, and grants to Dr. Cinciripini (R21CA16149 and R01CA75070).

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POS5-46 A PROSPECTIVE INVESTIGATION OF THE PREDICTIVE EFFECTS OF INTERVENTIONS EFFECTS OF THE NHS STOP SMOKING CESSATION PROGRAMME

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Background: The government has invested NHS Stop Smoking Services to help smokers stop smoking. However, the majority of smokers who use these services and approximate half of these fail to successfully complete the programme and over 75% of quitters relapse within six months. The factors relating to this short-term failure are unclear. If we can identify the factors relating to failure in naturalistic smoking settings, this can inform the NHS Stop Smoking programme as this would help cessation advisors identify “at-risk” smokers at the start of the intervention, which would aid in the more appropriate use and allocation of resources and help identify factors by which interventions can be tailored. The aim of the study was to assess to what extent the Transtheoretical model could provide a framework for understanding smoking behaviour in the context of the NHS stop smoking programme.

Methods: Smokers were recruited at the point of entry to stop smoking services based at GP surgeries across Avon and the West Midlands. In order to determine the factors important in smoking cessation and to identify those “at risk” at the start of the programme, smokers completed questionnaires on entry to the programme and four weeks later, at the end of the programme.

Results: Participants were on average 39 years old, were smoking 21 cigarettes a day for almost 21 years. Of the 183 smokers recruited, 49.7% quit at the end of the programme. Female participants were 2.3 times more likely to quit than males, OR=2.34 (1.11, 4.33) and those living with other smokers were 2.4 times more likely to drop out of the programme, OR=2.37 (1.08, 5.21). Only three variables predicted smoking status; weight, p<0.001; sessions attended, p<0.001; and maladaptive cognitions, p=0.008. The addition of the TTM variables did not significantly improve the model.

Conclusion: The TTM highlight important characteristics of those enrolling on the NHS Stop Smoking programme and provided an insight into those “at-risk” of dropping out of the programme. However the predictive ability of the TTM variables was not demonstrated and thus these variables may not be useful for predicting non-responders enrolling on the programme.
More women are quitting smoking due to pregnancy; however, the majority of them relapse late in pregnancy or within 3 months post-partum. Hispanic women are more likely than Non-Hispanic women to make a quit attempt, indicating that relapse-prevention interventions may benefit this population. Given the paucity of resources available in Spanish, there is need for culturally appropriate tobacco control materials. To fill this gap, the Forever Free for Baby & Me relapse-prevention booklet (adapted from the efficacious Forever Free booklets, Brandon et al., 2002; 2004) were transcreated into Spanish, utilizing a multi-stage qualitative approach with mainland US Hispanic women. To expand dissemination efforts and to assess cultural acceptability with island Hispanic populations, the relapse-prevention booklets were tested with health care providers in Puerto Rico. Qualitative, semi-structured interviews were conducted with 19 Hispanic health care providers who serve pregnant women. Providers averaged 20.6 years of experience. Feedback was elicited regarding booklet content, cultural appeal, dissemination, and smoking relapse prevention specific to island Hispanics. Providers were impressed with the booklets’ content, quality of translation, and visual appeal (e.g., photos, font colors, etc.). Specifically, providers praised the inclusion of interactive activities, “cuentos/stories”, and the partner booklet. Recommendations included reducing the amount of information in the booklets, delivering booklets as supplements to one-on-one counseling (vs. standalone); distributing the booklets after a “charla” (community themed presentation); and engaging in discussions regarding the booklets. Notably, providers demonstrated difficulty understanding the distinctions among primary prevention, cessation, and relapse prevention. Overall, this study demonstrated the cultural acceptability of the “Libros Para Siempre Por Mi Bebé y Por Mi” relapse prevention materials among community-based health care providers, while also suggesting a need to tailor the format and modality to local cultural preferences. This study was funded by USF grant CA118809 from the National Cancer Institute and a grant from the March of Dimes. 

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POS3-47 CULTURAL ACCEPTABILITY OF A SMOKING RELAPSE PREVENTION INTERVENTION FOR PREGNANT WOMEN IN PUERTO RICO: PROVIDERS’ FEEDBACK

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POS3-48 PATHWAYS TO SMOKING AND SNUS USE CESSATION—IS SPONTANEOUS QUITTING UNDERRATED?

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Recent studies have raised questions about the validity of the Transtheoretical model in smoking cessation; particularly the notion that quit attempts should be preceded by some preparation, which is assumed to increase the chance of success. To further investigate this, including snus (Swedish moist snuff) use quit attempts, a representative sample of 5,999 Swedish men and women between 16 and 80 years were interviewed via telephone during March to June 2006. Among 2,272 ex-smokers and current smokers who had ever made a serious quit attempt 48% reported to not having planned their latest attempt in advance, not even the same day. Furthermore 40% reported not even contemplating giving up smoking before they actually made the attempt. Regarding the attempts to quit using snus, the pattern was quite similar. Of 809 former and current snus users, 48% did not plan and 44% did not contemplate quitting in advance. Smokers and ex-smokers were considerably more likely to remain smoke-free for at least 6 months if the attempt was unplanned (sex and age adjusted OR=2.6; 95% CI=1.7-3.8). When dividing the smoking quit attempts into contemplated and not contemplated the advantage of the planned attempts remained OR=1.9; CI=1.3-2.9). The corresponding analyses of snus use quit attempts shows that also in this aspect, snus users do not differ from smokers. In conclusion, nearly half of the smoking and snus use quit attempts in Sweden are made without passing the contemplation and preparation phase of the Transtheoretical model. Not contemplated and unplanned quit attempts have a greater chance of long-term success. No funding.

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POS3-49 TRACKING WATERPIPE TOBACCO SMOKING PREVALENCE ON A U.S. COLLEGE CAMPUS

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Tobacco smoking using a waterpipe (a.k.a. hookah, narghile, shisha) is spreading worldwide, and may be particularly common on U.S. college campuses. Despite concerns regarding waterpipe tobacco smoking and public health, there is little information regarding its prevalence among the U.S. college-age population. In 2006, a survey of 744 Introduction to psychology students at Virginia Commonwealth University (VCU; 71.9% < age 20, 64.9% women, 43.4% non-white, 92.9% U.S. citizen) revealed 48.4% lifetime, 43.4% past year, and 20.4% past 30 day waterpipe tobacco smoking. Within the respondents that reported past 30-day waterpipe use, 70% reported that waterpipe is less harmful than a regular cigarette. In 2008, the identical survey was administered to a new group of Introduction to psychology students at VCU (n = 583; 61.5% < age 20, 56.1% women, 45.6% non-white, 91.8% U.S. citizen). In this sample, surveyed exactly two years later, respondents reported 57.5% lifetime, 48.4% past year, and 22.0% past 30-day use. Accounting for age, race, and gender between the samples, the increases in lifetime and past-year waterpipe tobacco smoking are statistically significant (P < 0.05). In addition, of those respondents who reported using a waterpipe to smoke tobacco in the past 30 days, 30.5% believed waterpipe to be less harmful than cigarettes, and a large proportion believed that there was a low or no likelihood of addiction using the waterpipe socially (57.8%). These data suggest that waterpipe tobacco smoking is common among U.S. college students and may be increasing. Controlling waterpipe tobacco smoking in the future likely requires better understanding of users’ motivations and attitudes, as well as the acute and long-term health effects of this form of tobacco use.

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POS3-50 ACUTE EXERCISE MODULATES CIGARETTE CRAVINGS AND BRAIN ACTIVATION IN RESPONSE TO SMOKING-RELATED IMAGES: AN fMRI STUDY

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The presence of cigarettes, for a nicotine-deprived smoker, is associated with increases in activation within the mesocorticilimbic brain system; a system recognized as mediating the rewarding effects of drugs of abuse. While pharmacological treatments have been designed to reduce cigarette cravings during temporary nicotine abstinence, consistent emerging evidence suggests that a single session of exercise can have similar effects. The aim of this study was to assess the effects of exercise on regional brain activation in response to smoking-related images during temporary nicotine abstinence. Following institutional ethical approval, regular smokers (n = 10) were randomised in a crossover design to begin with either an exercise (10-minutes moderate-intensity stationary cycling) or control (passive sitting for same duration) treatment. Immediately, following treatments, participants entered a functional Magnetic Resonance Imaging (fMRI) scanner. Participants viewed a series of smoking and neutral images for 3 seconds, with an average inter-stimulus-interval (ISI) of 10 seconds. Self reported nicotine cravings were assessed on a 7-point scale by the statement “I have a desire for a cigarette” at baseline, mid-, and post-treatments. A significant interaction effect (time by group) was found for desire to smoke F (1,24, 11.18) = 11.87, p = .004, with self-reported cravings lowering at all time points after baseline following the exercise treatment. During control scanning, significant activation was recorded in areas associated with reward (caudate nucleus), motivation (orbitofrontal cortex) and visuo-spatial attention (parietal lobe, parahippocampal and fusiform gyrus). Post-exercise scanning showed a reduction in activation of these areas with a concomitant shift of activation towards areas identified in the “brain default mode” (Broadmann Area, BA, 10). The study confirms previous evidence that a single session of exercise can reduce cigarette cravings, and for the first time provides evidence of a shift in regional brain activation in response to smoking cues.

No funding.

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POSS5-32
A RANDOMIZED CONTROL TRIAL (RCT) ON SMOKING CESSATION INTERVENTION WITH NICOTINE REPLACEMENT THERAPY (NRT) ON PATIENTS WITH ERECTILE DYSFUNCTION IN HONG KONG
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Background: Smoking can cause erectile dysfunction (ED) and ED patients have a high risk of coronary heart disease. We conducted an RCT on the effectiveness of a smoking cessation intervention among Chinese ED patients.
Methods: Chinese ED patients aged 18 or above, smoking at least 1 cigarette daily, intending to quit within 7 days and accepting NRT were included. Subjects were randomly allocated into 2 intervention (A1 and A2) groups and one control group. A1 group received a 3-minute brief adherence counseling in addition to a 15-minute smoking cessation counseling emphasizing on the relationship between smoking, quitting and ED and free supply of NRT at baseline and 1-week provided by a trained male counselor; whereas, A2 group received the same intervention as A1 but with no adherence counseling. The control group received a 10-minute brief cessation counseling. We followed up all subjects at 6-month via telephone. We combined A1 and A2 and compared with the control group in the present analysis. All self-reported quitters at 6-month follow up were invited for urinary cotinine and exhaled carbon monoxide validation of use.
Results: 719 subjects were recruited from January 2004 to April 2007 with 249 in A1, 252 in A2 and 218 controls. Of all the subjects, 50% (362) were aged 30-50 years, 37% (267) had severe nicotine dependency, 25% (180) took ED medications and to cover up the taste of tobacco, but then develop a stronger desire for the menthol taste over time. Targeted product development has been used to promote smoking initiation in new markets, or maintain smoking where it has been entrenched in older populations, contributing to disparities in smoking-related outcomes. Brands with lower menthol levels are designed by the tobacco industry to recruit previously uninitiated youth and young adults and are more popular among these groups. Multinational tobacco companies have also explored the use of additives such as eugenol in targeted product development. Menthol promotes smoking among youth and young adults, supporting nicotine dosing. Tobacco companies control menthol in some brands to target the sensory preferences of new or younger smokers, thus easing smoking initiation and facilitating nicotine dependence in new populations.
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POSS5-53
PREVENTORS OF PHYSICAL ACTIVITY, HEALTHY EATING, AND BEING SMOKE FREE AT SCHOOL IN TEENS: USE OF THE THEORY OF PLANNED BEHAVIOR TO HELP EXPLAIN MULTIPLE BEHAVIOR RESEARCH
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Objectives: The overall goal of this study was to better understand the use of theories in multiple health behavior changes. Specific objectives include: 1) To determine whether the Theory of Planned Behavior (TPB) explained significant variation in physical activity, healthy eating and being smoke free intentions and behavior, and 2) to examine the relationship between the beliefs and the specific TPB global constructs.
Methods: Using Ajzen’s recommendations belief elicitation interviews were used to identify the key beliefs about the three behaviors, which were then used to generate common and specific beliefs for the theory of planned behavior questionnaire. 183 students completed the TPB questionnaire at Time 1 that measured their intention, and one month later at Time 2, completed a survey that measured their behaviors to participate in physical activity, fruit and vegetable consumption and being smoke free.
Analysis: Zero order correlations were conducted to identify potential covariates. Path analysis was conducted for each health behavior to test the tenets of global TPB constructs. A series of multiple regression analyses were conducted for each health behavior to examine the relationships between beliefs and the TPB global constructs.
Results: Attitudes, subjective norm and perceived behavioral control were significant predictors of intention for all three health behaviors and accounted for between 57% and 68% of the variance in intention. Intention significantly predicted each health behavior. Indirect effects were significant for attitude, subjective norm and perceived behavioral control for being smoke free, physically active and healthy eating.
Conclusion: Findings from this research contribute to using the Theory of Planned Behavior to advance multiple behavior research that can advance school health programs that adopt more than one targeted behavior intervention.
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POSS5-54
QUITTING INTENTIONS AND BEHAVIOUR OF SMOKERS BY ETHNICITY, DEPRIVATION AND FINANCIAL STRESS (ITC PROJECT – NEW ZEALAND)
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Aim: To determine how smokers’ quitting intentions and behaviour vary by ethnicity, deprivation and financial stress.
Methods: The New Zealand arm of the International Tobacco Control Policy Evaluation Survey (ITC Project) has been collecting data from adult smokers in New Zealand since 2003. From this sample we surveyed adult smokers using standard ITC Project procedures. Descriptive analyses were undertaken using weights to make the sample representative of all New Zealand smokers.
Results: Maori smokers had a similar intention to quit in the future to European smokers (68.7% vs. 68.2%). For Pacific smokers and Asian smokers the respective figures were higher (80.0% and 74.1%) but not significantly so. There was no significant variation in quitting intention by level of socio-economic status (deprivation level) (i.e., 63.1% in the least deprived quintile and 69.3% in the most deprived quintile). Similarly, past quit attempts did not vary by ethnic deprivation (58.3% had ever made a quit attempt). However, financial stress was associated with both quitting intention and past quit attempts, e.g., for those reporting being unable to pay important bills on time (OR=2.65, 95% CI=2.05-3.42 and OR=1.83, 95% CI=1.04-3.22, respectively). "Smoking-induced deprivation” was also associated with quitting intention (OR=1.71, 95% CI=1.2-2.62; i.e., “have you spent money on cigarettes that you knew would be better spent on household essentials like food?”). Smoking-induced deprivation was common at the New Zealand level and past quit attempts to other smokers.
Conclusions: A majority of New Zealand smokers have some intention of quitting and have made past quit attempts. These did not vary significantly by ethnicity or by deprivation level but financial stress was associated with higher quitting intention and attempts. This group could therefore be prioritised for additional quitting support.
Health Research Council of New Zealand.
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SMOKING CESSION FOR METHADONE CLIENTS

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Introduction: U.S. research reports clients of methadone programs to be especially likely to smoke, and unlikely to quit. No published Australian research has addressed cessation for this group. The aim of this study was to examine the smoking and cessation behaviours and motivations of a sample of Australian methadone clients, in order to inform the design and evaluation of future cessation interventions.

Methods: 103 methadone clients, recruited through two public clinics in NSW, completed a questionnaire.

Results: The prevalence of current smoking was 84%, with a quit ratio of only 9.6%. Just over half of smokers reported ever having made at least one serious quit attempt: approximately one quarter of these having done so within the last year. A much greater proportion (58%) of this same group however, reported a "period of smoking abstinence of 24 hours or more" within the last year: many apparently not considered "a serious quit attempt". More than half of smokers (54%) were classified as being in the "precontemplation" stage according to the Transtheoretical Model, and one third could be classified as "hard core smokers". Very high levels of psychological distress were indicated, and associations were identified (especially for stress) with measures related to assessment of the pros/cons of smoking and self-efficacy/situational temptations to smoke.

Conclusions: Australian methadone clients need to be provided with smoking cessation support in a manner, which takes account of their smoking and cessation behaviours and motivations, as well as their high levels of psychological comorbidity and potential social disadvantage.

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EXAMINATION OF FREE BASE NICOTINE AND VOLATILE ADDITIVES IN SMOKLESS TOBACCO BY HEADSPACE SPME GCMS

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Free base nicotine, and tobacco ingredients, have been cited as influencing the appeal of tobacco products. Analysis of these species in tobacco products has been a significant challenge, due to the complexities of the tobacco matrix and nicotine chemistry. A method for identification of additives on tobacco, and comparison of the levels of free-nicotine, has been developed to offer greater insight into the chemical composition of smokeless tobacco products. Solid phase micro-extraction (SPME) combined with GC/MS was used as this technique is highly suited to flavour analysis; SPME has also been used for estimation of free-base nicotine in cigarette smoke. The analysis was conducted by placing a snus pouch, or a pellet of loose snus, into a headspace vial. A solution of Toluene-d8 in methanol was added as an internal standard. Automated SPME analysis was conducted using a Gerstel MPS2 autosampler, connected to an Agilent 5973 GC/MS. The headspace was sampled at 30°C for 2 minutes using a pre-conditioned 100-micrometer Polydimethylsiloxane (PDMS) fibre. GC analysis was conducted in splitless mode for analysis of flavour compounds, and in a 20:1 split mode, for the analysis of major constituents such as nicotine. A DBWaxETR (Agilent) GC capillary column was used to separate the headspace components. MS peak identification was conducted using Agilent Flavour and Wiley libraries. A range of smokeless tobacco products were analysed using this methodology. Three Swedish pouched snus products, two Swedish loose snus products, one unflavoured Swedish snus tobacco blend, one Canadian snus tobacco product, two US non-smokeless products. Data analysis of flavour compounds was conducted by comparison of composition synchronised chromatograms of all the samples followed by classification based on tree dendrograms and Principal Component Analysis (PCA). Significant differences were observed between unflavoured, Swedish, US and Canadian products. The data analysis techniques highlighted commonality in the flavour profiles of the Swedish tobacco products. Nicotine levels are compared across product types and compared to tobacco pH levels.

This study was funded by British American Tobacco.

ADOLESCENT TOBACCO USE ATTITUDES AND BEHAVIORS BEFORE AND AFTER A DEMONSTRATION OF SMOKER FACIAL WRINKLING USING AGE PROGRESSION SOFTWARE

Cheryl Higbee, M.P.H.1*, Pat Hysert, Jennifer Graf, M.P.H., and Andrew Hyland, Ph.D., Roswell Park Cancer Institute

Background: Young people are concerned about their image and respond better to anti-tobacco messages that focus on nearer term endpoints. Facial wrinkling of smokers is expressed prematurely and more severely than those of nonsmokers. This randomized study assessed whether being exposed to images of individuals with cigarette-related wrinkling reduces the likelihood of smoking initiation.

Methods: A total of 862 8th and 10th grade students completed both the baseline survey at the beginning of the school year and the follow-up survey at the end of the school year. The intervention consisted of two side-by-side images. The first was their original photograph digitally aged up to age 50 under normal conditions. The second was the same picture digitally aged up to age 50 as a smoker or as an obese person, depending on the study condition. The aging and wrinkling photos were selected by the adolescents based on current scientific evidence and result in realistic images. Smoking was defined as having smoked in the past 30 days.

Results: Over 90% of the participants reported that how they look is important to them. 96% of the students remembered the demonstration, 75% reported that it said something important to them, and over 70% reported talking to someone about it afterwards. Progression to smoking was lower in the tobacco group (2%) compared to the control group (5%), although intermediate measures of willingness to smoke were comparable between the two groups.

Conclusions: Aging images could be a valuable part of tobacco prevention interventions among adolescents.

No funding.

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**POS3-60**

**A COMPARISON OF CONSUMPTION BEHAVIOUR IN SWEDISH USERS OF LOOSE AND PORTION SNUS**


We have previously reported initial findings of a study of snus consumption behaviour in Sweden, in which a telephone survey of around 3,000 snus users was conducted between March and April of 2007. Snus in Sweden is principally available in two forms — one where the tobacco is loose and the consumer takes a pinch of tobacco from the tin, and one where the tobacco has been sealed in pouches and the consumer typically takes one pouch from the tin at a time.

The objective of this paper is to analyse and compare data on consumption behaviours of male users of loose snus to male users of pouched snus. The male population was relatively evenly distributed between use of loose snus (41.9%) and pouched snus (54.0%). In this study the average daily consumption was considerably higher in loose snus users (mean around 30 g per day) than pouched snus users (around 12 grams per day). In our study sample there were very few loose snus users taking less than 10 grams per day, and a significant portion using 50 grams per day, as compared with pouched snus where 50% were consuming less than 10 g per day and very few subjects consumed over 25 grams per day. Frequency of use and duration for each usage was similar for both loose and pouched use, and the key factor governing the increased amount of tobacco used seemed to be the fact that loose snus users take a much larger amount of tobacco for each use than is taken in a pouch.

**No funding.**

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**POS3-61**

**RECENT QUITTERS’ CHANGES IN ATTITUDES AND BEHAVIOURS TOWARDS SMOKING RESTRICTIONS: A LONGITUDINAL ANALYSIS OF THE ONTARIO TOBACCO SURVEY**

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Introduction: Many theories of health behavior change posit that attitude change precedes behavior change. Cross-sectional studies have shown that former smokers’ attitudes towards smoking restrictions are more similar to non-smokers than current smokers but do not clarify whether these attitudes changed prior to, or following cessation. In this study we examine the attitude and behavior changes related to smoking restrictions over 18 months of follow-up among a sample of smokers who recently quit.

Method: Analysis is based on the Ontario Tobacco Survey, an ongoing longitudinal study of smokers (2005-2011). At the time of this study 3,038 individuals had 6 to 18 months of follow-up. Recent quitters (smoked the past 6 months, but not more than 30 days) who remained quit throughout follow-up were included (N=457) and compared to recent quitters who relapsed (i.e., smoked at least one whole cigarette during follow-up; N=254). General attitudes about smoking restrictions and specific restrictions, such as smoking in the home, were compared between recent quitters and relapsers over time. All analyses corrected for the sampling design effects.

Results: Just over 70% of recent quitters agreed with the statement “there are enough controls on smoking, and we should leave smokers alone” at the time of their quit. By 18 months of follow-up, this increased to 80% of recent quitters who had remained quit, significantly lower than those that relapsed (73%, p<0.01); however successful quitters were not more likely to believe that restrictions should be increased. At the time of their quit, 75% lived in homes in which smoking was not allowed by any resident; this increased to over 95% by 18 months of follow-up, significantly higher than respondents who relapsed (79%). Furthermore, 97% of quitters did not allow smoking in their vehicles by 18 months, compared to 64% at the beginning of their quit, and not greater than relapers (75% and 68% respectively).

Conclusion: These findings suggest that the attitudes of former smokers differ- entiate from those of current smokers following their quit. Ongoing follow-up will provide more insight as to rate of change prior to and following a successful quit.

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**POS3-62**

**CHALLENGING THE STAGES OF CHANGE – UNIFORMITY OF PREDICTION OF MAKING A QUIT ATTEMPT AMONG SMOKERS PLANNING TO QUIT IN THE NEXT 30 DAYS**

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The concept of stage of change, as espoused by the Transteoretical Model (TTM), is only useful if predictors of behaviour change within each stage are more similar than across stages. Most research on the TTM is conducted within a cohort, and as a result the stage boundaries are appropriate, however there is virtually no empirical evidence that the defining characteristics used differentiate fundamentally distinct stages. We describe two studies exploring whether the factors predicting making a quit attempt are uniform among smokers planning to quit in the next 30 days (the cognitive component of the preparation stage). In the first, we explored the validity of the behavioural criterion for the preparation stage boundary, a 24-hour quit in the previous year. Among 1046 participants in a trial of a telephone counselling/tailored printed advice intervention, a multivariate model including TTM predictors explained greater variance in making a quit attempt among those with quit experi- ence, defined either in terms of recency (a 24-hour quit in the previous month) or duration (a 30-day quit in the previous year). This finding is consistent with the TTM definition resulting in less differentiation. A second study explored whether splitting the 30-day period in terms of an implementation intention (in the form of a quit date) defined groups with clearly different patterns of prediction. Among 283 participants in a trial of tailored advice program, 25% of smokers planning to mak- ing a quit attempt was predicted among smokers with a quit date, compared with 7.3% in the group without a quit date, and only 9.3% in the overall sample. The findings show that the behavioral component of the TTM definition is not a useful determinant, while an implementation intention may be a better cognitive differentiator than planning in the next 30 days. As there are points at which the predictive power of variables change, the findings support the usefulness of the concept of stage, but not its operationalization in the TTM.

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**POS3-63**

**CHEWING TOBACCO SALE AND REGULATION IN THE SOUTH ASIAN COMMUNITY IN ENGLAND: THINKING GLOBALLY ACTING LOCALLY**

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Objective: Smokeless tobacco covers a wide range of different products including nasal snuff, oral snuff and chewing tobacco. Limited research attention has been afforded to the use of these products in migrant communities. In Britain, chewing tobacco is predominantly used by Indian, Pakistani and Bangladeshi communities.

Objectives: The aim is to describe the range of smokeless tobacco products used by the South Asian community in England, the extent to which they comply with local legislation and the adequacy of this legislation in comparison to comparable products.

Methods: Using 2001 census, four Local Authorities with high numbers of resi- dents of Asian origin were identified. Within each area, the wards with the highest number of: Asian British Indian, Asian British Pakistani and Asian British Bangladeshi were identified. Retail premises within these wards were visited follow- ing a systematic protocol to purchase and then assess smokeless tobacco products.

Results: A wide range of products were purchased including products made fresh- ly in the shop and manufactured products imported from the Asian sub-continent. These were available in a variety of outlets, many of which did not sell cigarettes. Preliminary results indicate that less than half of the premises selling these products displayed age restrictions for sale and a quarter of the products did not display legally required health warnings either because they were absent or when present, were either inaccurate, or in a written form that maybe incomprehensible to the target community. The price of these products was low in comparison to cigarettes.

Conclusions: Chewing tobacco products are currently being sold with little reg- ulatory oversight. The legislative control of these products is limited and outmod- ed in comparison to cigarettes. Given the overseas manufacture for some products, an international drive to regulate chewing tobacco products is fundamental to improve public health.

This study was supported with the aid of funding from Cancer Research UK Smokeless tobacco in the UK-Products, Populations and Policy.

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**POS3-64**  SUPPORT FOR OUTDOOR SMOKE-FREE ORDINANCES: A MIXED METHOD SURVEY OF SMOKERS AND NON-SMOKERS IN WOODSTOCK ONTARIO

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Background: On September 1, 2008, the city of Woodstock (Ontario) enacted a comprehensive outdoor smoke-free ordinance (OSFO) that banned or restricted smoking in 7 outdoor environments, including public and private doorways, transit stops, city-owned recreational fields and parks, sidewalk cafes, and city-sponsored cultural outdoor events. A mixed method evaluation project was created to measure support for OSFO among the general public and among smokers who were going to be directly impacted by the bylaw.

Methods: In August 2008, prior to the bylaw, a representative sample of adult (18+ years old) smokers and non-smokers from Woodstock were surveyed using a random digit dialed (RDD) phone survey to measure support for OSFOS. To measure levels of support for the Woodstock OSFO among smokers who smoked in environments that would be impacted by the bylaw, an identical parallel face-to-face (F2F) survey was conducted among adults who were observed smoking in 1 of the 7 outdoor environments prior to their regulation. We report results from this pre-post survey wave of our prospective cohort evaluation study of the Woodstock OSFO.

Results: The RDD phone survey recruited 601 respondents, (233 smokers and 368 non-smokers). The F2F survey recruited 171 smokers. Thus, there were a total of 404 smokers surveyed. Most smokers supported OSFO on outdoor patios of family restaurants (57%), and in public (75%) and private (57%) doorway areas. Smokers and non-smokers differed most in their support for restrictions on patios for pubs. 59% of non-smokers and 15% of smokers were in favor of smoke-free patio pubs. 49% of non-smokers and 15% of smokers were in favor of smoke-free city parks. Although support among smokers was low for smoke-free pubs, as expected, almost half (48%) of smokers supported restricting smoking to "some outdoor areas" of the park. Support did not differ greatly between smokers sampled on the phone vs. F2F.

Conclusion: Prior to the bylaw, smokers and non-smokers supported OSFO that make confined environments like outdoor patios of family restaurants and doorways smoke-free. Most smokers also support restricting outdoor smoking to designated smoking areas.

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**POS3-65**  PERCEPTIONS OF SMOKELESS TOBACCO PRODUCTS AMONG ARTISANS IN IBADAN

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Background: Tobacco companies are making moves to introduce smokeless tobacco products in Nigeria in the near future. There are already indications that a new marketing strategy may be introduced soon. This study was designed to elicit the perceptions of artisans about the addictive effects of smokeless tobacco products.

Methods: One hundred and forty three participants were recruited among artisans in Ibadan. All the participants were males. Four focus group discussion sessions were then conducted for 25 willing participants who said they had used or knew someone who used a smokeless tobacco product before. The discussions were audio-taped, transcribed and coded using the NUDIST software. Observer variability was 84%.

Results: The respondents could be classified under four major themes that were identified: (1) Smokeless tobacco products are used by females or by males; (2) Smokeless tobacco products are not necessarily safer; (3) Smokeless tobacco products are less addictive; and (4) Smokeless tobacco can be used by "social smokers" and should be easy to quit. Comments include “Smokeless tobacco products are easy to quit”.

Conclusions: Perceptions about addictive effects of these products and the purported ease of cessation of their users suggest a need to design and test true cessation patterns among Nigerian smokers. There is also a need to further explore perception of smokeless tobacco products in the larger population.

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**POS3-66**  A RANDOMIZED CONTROLLED TRIAL OF A BRIEF ADHERENCE COUNSELING INTERVENTION ON SMOKE CESSATION AMONG UNMOTIVATED SMOKERS

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Background: Although nicotine replacement therapy (NRT) can increase the quit rate and can help unmotivated smokers to reduce cigarette consumption, non-adherence in NRT use is common in Hong Kong.

Methods: Chinese smokers aged 18 or above who smoked at least 1 cigarette daily were randomized to continuation to NRT and no intention to quit smoking in the next 6 months were recruited to a randomized controlled trial of a smoking reduction intervention. The intervention group was further randomized into two arms with smokers receiving a 15-minute smoking reduction counseling and a 3-minute brief counseling on adherence to NRT at baseline and 1-week (ADIN group), while the other arm receiving the smoking reduction counseling only (without ADIN group).

The control group received a self-help cessation manual only. Free NRT patch or gum was provided to the intervention group for 8 weeks, during 1-week and 1-month follow-up. Both intervention and control groups were followed up at 3-month (adherence to NRT) and 6-month (quit rate) via telephone. The present study recorded the comparison between the 2 arms of the intervention group.

Results: 928 subjects were randomly allocated to the intervention groups: 479 to the ADIN group and 449 to the without ADIN group. 61% of the subjects were male with a mean age of 46 years. A mean duration of smoking of 24 years, smoking on average 20 cigarettes daily. 46% had severe nicotine dependency. At 3-month follow up, subjects in the ADIN group and the without ADIN group showed similar proportions of continuous NRT use for 4 weeks (69.7% vs. 70.5%; p=0.14); 4 weeks (68.3% vs. 69.6%; p=0.48); 8 weeks (63.2% vs. 63.3%; p=0.96). Nevertheless, at 6-month follow up, the ADIN group had a significantly higher quit rate (20.9% vs. 12.9%; p=0.001) than without ADIN group.

Conclusion: The brief adherence counseling was not effective in promoting the use of NRT among unmotivated Chinese adult smokers, but more subjects who received the adherence intervention had quit smoking at 6-month. While the adherence intervention may not improve the continuous use of NRT, the increased intensity and contact time in counseling yielded a higher quit rate among the unmotivated smokers.

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**POS3-67**  RELATIONSHIP BETWEEN SPousAL SMOKING STATUS AND ABSTINENCE AMONG RURAL SMOKERS

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Background: Smoking cessation may be inhibited by the presence of a spouse that smokes. It is less clear, however, whether a spouse that is an ex-smoker impairs or facilitates smoking cessation. In addition, the differential role that gender appears to play among these relationships requires further exploration.

Aim: To assess the relationship among the smoker’s gender, spousal smoking status and smoking abstinence 24 months after enrollment in a smoking cessation disease management program.

Design: Secondary analysis of a randomized clinical trial, Kan Quit, designed to evaluate the effectiveness of a disease management smoking cessation program among rural smokers. Participants: A total of 494 smokers in spousal relationships, smoking >10 cigarettes per day, at all stages of readiness to quit were included in the present analysis.

Outcomes: Self-reported 7-day point prevalence abstinence at 24 months.

Results: By 24 months, 42 (34.2%) of 123 participants married to a never smoker, 26 (25.2%) of 103 married to a former smoker, and 55 (20.5%) of 268 married to a current smoker had quit (p = 0.2). For female participants, 14 (25.5%) of 55 married to a never smoker, 19 (27.1%) of 70 married to a former smoker, and 31 (19.6%) of 158 married to a current smoker had quit (p = 0.39). For male participants, 28 (41.2%) of 68 married to a never smoker, 7 (21.2%) of 33 married to a former smoker, and 24 (21.8%) of 110 married to a current smoker had quit (p = 0.01).

Conclusion: While successful smoking cessation for men appears to be linked to the smoking status of their spouse, this effect appears to be negligible among women. Compared to being married to a non-smoker, being married to an ex-smoker does not appear to provide a smoking cessation advantage for either gender.

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in communities with such policies. We hypothesized an indirect effect such that ASPs may affect adolescent regular smoking through peer smoking.

Methods: Our sample was 305 15 year olds (52% female, 40% non-Caucasian), taking part in the first of a four wave (3 year) longitudinal study of the ASP and smoking. Controlling for demographics and socioeconomic status, parental smoking, and adolescent alcohol use, we measured household and automobile smoking restrictions, warnings about the risks of smoking, and whether parents would know if the adolescent smoked or have asked whether the adolescent’s peers smoke. We also controlled for the parenting practices parental monitoring and parent-adolescent communication. Data were analyzed with a Structural Equation Model (SEM), with indirect effects estimated using delta method standard errors.

Results: The SEM fit the data well, χ²(24, n=305) = 32.54, p=.11. Amongst ASPs, car smoking restrictions (β=.08, 95%CI=.04-.04), warnings about the risks of smoking (β=.08, 95%CI=.13-.02), and parents knowing whether the youth smoked (β=.26, 95%CI=.46-.06) had significant negative indirect effects on youth smoking. Although car restrictions and parents knowing had a significant bivariate direct effects on regular smoking, warnings did not, suggesting the latter may have a delayed indirect effect on regular smoking.

Conclusions: The findings suggest that several antismoking parenting practices may be especially protective against youth smoking. By parents warning youth about the risks of smoking, monitoring youth smoking, and restricting smoking in cars, parents may decrease the youth risk of smoking. This in turn may decrease the likelihood youth to smoke.

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POS3-70 THE IMPACT OF PUBLIC POLICIES ON QUITTING

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The Minnesota Adult Tobacco Survey (MATs) is a statewide, cross-sectional survey that measures tobacco use among Minnesota adults. MATs was conducted in 1999 and 2003, with the most recent MATs conducted in 2007 (n=12,580). Between 2003 and 2007, several Minnesota communities implemented local smoke-free ordinances, which provided protection from smoking in public place for 38.1% of Minnesotans. A health impact fee raising the price of cigarettes by 75 cents was implemented in 2005. MATS 2007 examined quitting among Minnesota smokers in relation to these public policies. Current smokers in Minnesota reported that the increased cost of cigarettes and local smoke-free ordi-

nances helped them make a quit attempt in the past year (26.3% and 28.1 respec-
tively). There was no significant difference in the percentage of current smokers with a past-year quit attempt among those living in communities with ordinances (as determined geographically) compared to those living in communities without such ordinances. Current smokers who perceived that their community had an ordinance – whether or not they actually did — were more likely to report a quit attempt in the past 12 months than those who did not perceive that their commu-

nity had an ordinance (57.9% versus 45.2%, p<.05). Smokers who were prohibit-

ed from smoking outdoors at their workplace were more likely to report a past-year quit attempt than those working in settings without such a policy (72.2% versus 50.7%, p<.05). Similarly, smokers with smoking-free rules in their homes reported past-year quit attempts more frequently than those without home rules (58.8% versus 46.1%, p<.05). MATS 2007 provides evidence that implementing smoke-free policies ordinances, and the price of cigarettes contextualize smokers to attempt to quit. MATS results suggest that the perception of a smoke-free ordinance has a stronger relationship to quit attempts than the objective existence of such an ordi-
nance and the effect of a clean indoor air ordinance may spread beyond the boundaries of the communities in which it was implemented and are outside buildings at workplaces and smoke-free home rules also support quit attempts.

The 2007 Minnesota Adult Tobacco Survey was funded by ClearWay Minnesota and Blue Cross and Blue Shield of Minnesota.

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POS3-71 LIKELIHOOD OF MAKING QUIT ATTEMPTS AND SMOKING CESSATION AMONG YOUNG ADULT SMOKERS

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Background: Across North America, smoking prevalence tends to be highest among young adults. Most studies of young adult smokers have focused on col-
lege students. We examined the likelihood of making a quit attempt (QA) and suc-
cessful cessation during 6-month follow-up periods among young adult smokers in the general population.

Methods: Self-report data on 431 young adult (18-30 years) current smokers were compiled from the Ontario Tobacco Survey, a longitudinal telephone survey of smokers conducted between 2005-07 in Ontario, Canada. A QA was defined as a report of making a serious attempt to quit during 6-month follow-up periods; ces-
sation was defined as being smoke-free for one month or more at follow-up. Design-based analyses examined characteristics of young adult smokers. QA and cessation during a 6-month period were modeled on demographics, quit inten-
sion, consumption, as well as one’s perceptions toward personal health, addiction, and benefits to quitting while accounting for the longitudinal nature of the study design. Results: Among Ontariom young adults, 22% reported a QA during this 6 month follow-up, 40% reporting doing a QA and 7% had not smoked in the past 30 days. Young adults 2.2 times more likely to make a QA if they had reported an intention to quit smoking at the begin-
ning of the 6-month period and were 1.6 times more likely to make a QA if they had previously made other attempts. For smoking cessation, those with an intention to quit were 2.5 times more likely to become a former smoker at follow-up; those who perceived themselves to be “very addicted” to cigarettes were almost 4 times more likely to become former smokers than those who perceived themselves to be very addicted.

Conclusions: No demographic characteristics predicted a QA or cessation among young adult smokers; however, having a 6-month quit intention strongly pre-
dicted a QA as well as cessation. Thus, it is crucial that public health not only direct resources to encourage young adults to change their smoking behaviors and develop-
cut intentions to quit, but also provide them with easy-to-access cessation services. This research was conducted by The Ontario Tobacco Research Unit, which receives funding from the Ontario Ministry of Health Promotion.

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POS3-72 ASSESSMENT OF NICOTINE DEPENDENCE AND ITS DEMOGRAPHIC CORRELATES AMONG AFRICAN-AMERICAN SMOKERS

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Background: Despite scientific evidence that smoking is highly addictive, little information is available on the prevalence of nicotine dependence among African-American smokers. An understanding of the role of associated factors in shaping smoking behavior could facilitate an understanding of effective smoking cessation interventions among African-Americans.

Objectives: The primary objective of this study was to examine the associations between demographic variables, socioeconomic status, self reported smoking his-
tory and nicotine dependence among African-American smokers.

Methods: This study is a secondary analysis of data collected during a random-
ized clinical trial to evaluate the efficacy of 3 types of nicotine gum on the speed to subjec-tively meaningful reliefofacutecravinginadultsmokers.DatacollectedfromAfrican-American participants (n=206) at one of the investigational sites, dur-
ing their screening assessment, were utilized. This study was a cross-sectional assessment of factors that could be associated with nicotine dependence among African American smokers.

Results: The average age of the participants was 44 years (range 18 to 76 years) with an equal split between the genders. The unadjusted analysis showed that OR=4.186, CI=1.004-1.414 (p<.05) and very addicted (OR=3.635, 95% CI=1.551-8.519) were associated with high nicotine dependence. Similarly, the multivariate analysis showed that age of smokers (OR=1.040, 95%CI=1.004-1.078), number of yearsofregular smoking (OR=3.635, 95% CI=1.551-8.519) were associated with high nicotine dependence. A higher dependence underscores the significance of early prevention of smoking and importance of delaying smoking onset. The findings also highlighted the need for targeted smoking cessation interventions among African-American smokers to achieve more effective prevention and treatment of nicotine dependence.

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The Minnesota Adult Tobacco Survey (MATS) is a statewide, cross-sectional survey that measures tobacco use among Minnesota adults. MATS was conducted in 1999, 2003, and in recent years has been conducted in 2007 (n=12,580). Minnesota has a comprehensive program that ensures access to cessation services for all Minnesota smokers regardless of health insurance status. MATS measures key cessation indicators over time. In 2007, 56.7% adults who smoked in the past 12 months attempted to quit in the past year. Women are more likely to have made a quit attempt than men (63.4% versus 50.1%, p<0.05). While awareness of free assistance to quit smoking among smokers was high (78.0%), over half (55.4%) of smokers with past year quit attempts believe they could quit smoking without stopping smoking medications. The majority of young adult smokers (aged 18-24-years-old) believed that they could quit smoking without medications. This rate was higher than any other age group (p<0.05). 72.6% of smokers believe that stop-smoking medications are too expensive and 31.4% believe that stop-smoking medications might harm their health. In 2007, 45.5% of Minnesota’s current smokers with a quit attempt in the past year used some form of stop-smoking medication, an increase from 30.9 percent in 2003 (p<0.05). Young adult smokers were less likely to report medication use than older smokers (p<0.05). Use of nicotine replacement therapy also increased from 26.0% in 2003 to 38.7% in 2007 (p<0.05). Use of behavioral counseling rose from 3.6% in 2003 to 15.1% in 2007 (p<0.05). Young adults were less likely to use behavioral counseling than older smokers (p<0.05). Many Minnesota smokers are trying to quit and increasing numbers are accessing evidence-based services, including behavioral counseling and stop smoking medications, to help them do so. While young adult smokers are interested in quitting, few are using medications and counseling programs in their attempts to quit. Further efforts to connect these smokers with available cessation services are warranted.

Evidence of Increased Smoking Cessation Among Massachusetts Adults: A Longitudinal Study in an Era of Tobacco Control

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Increasing the rate of smoking cessation is one of the most effective public health strategies for improving the health of the population. The US Centers for Disease Control and Prevention’s Health Behavior Change Outcomes database indicates that between 1974 and 1991 approximately 2.6% of adult smokers in the U.S. permanently quit each year. Recent evidence suggests that tobacco control measures can increase the population rate of successful cessation, but with our current level of longitudinal evidence has been brought to bear on this hypothesis. This paper presents a descriptive analysis of prospective changes in smoking status among Massachusetts adults between 2001 and 2006, during and after a time when a comprehensive tobacco control program was in place. The data come from an RDD survey of Massachusetts current and recent smokers who were interviewed in 2001-2002 and most of whom were re-interviewed at two-year intervals. We observed that after two years, 14.8% of baseline smokers had been abstinent for more than three months, which would represent roughly 7% of the total adult smoking population each year. What proportion of these can be considered to have quit “permanently?” Among former smokers abstinent for more than 3 months at baseline, approximately 71% percent reported being abstinent four years later. Assuming that 71% of those who achieved 3+ months abstinence each year will maintain abstinence over four years (i.e., 71% of 7% = 5%), and that later relapse after this period of time is quite rare, we estimate that in Massachusetts, approximately 5% of smokers quit permanently each year during the period of this study (2001 to 2006). This is about twice the rate observed earlier in the U.S. This boost in smoking cessation may be a consequence of the comprehensive tobacco control program that was implemented between 1994 and 2002, as well as the statewide smokefree workplace policy that came into effect in July of 2004, about mid-way into this longitudinal study. This rate of cessation may be a useful benchmark for other programs seeking to promote smoking cessation in the population.

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POSS-77 PREDICTORS OF ENVIRONMENTAL TOBACCO SMOKING RESTRICTIONS

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Environmental tobacco smoke (ETS) is associated with a variety of negative health outcomes for non-smokers, including an increased risk of heart disease and lung cancer, and respiratory problems in children. ETS exposure is especially critical for children and adolescents whom parents may not want to influence given the bad example they set. As such, it is important to understand what factors predict child and adolescent ETS exposure. In this study we sought to understand what demographic and socioeconomic status (SES) may predict environmental tobacco smoking restrictions. Participants were 316 South Eastern PA 9th grade adolescents (age 15: 50% female, 56% Caucasian) in a first year study of the effect of anti-smoking parenting practices on adolescent smoking. We assessed ETS restrictions with a latent variable (factor) indicated by observed measures of restricted household and car smoking, not sitting in public smoking sections, and parents asking smokers not to smoke in the family’s presence. Predictors were race, sex, and maternal and paternal education (1=high school education or less) and employment (1=full time), free or low cost lunch, household family structure (number of parents), and parental and adolescent smoking. The data were analyzed with a Multiple Indicator Multiple Cause (MIMIC) model, which assesses the effects of predictors on the factor and indicator variables. The MIMIC model fit the data well (cf2(26,n=316) = .36.00, p=.06. Maternal and paternal smoking and maternal education were negatively associated with having smoking restrictions, whereas father’s employment was positively associated with having smoking restrictions. Regarding direct effects on specific restrictions, paternal smoking was associated with a decreased likelihood of having total household smoking ban. The results suggest that several different maternal and paternal factors may contribute to general and specific ETS restrictions, and suggest individuals to target for ETS prevention and intervention efforts.

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POSS-78 PSYCHOLOGISTS AND SMOKING CESSATION INTERVENTION: UNREALIZED POTENTIAL

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Introduction: Psychologists are potentially ideal providers of smoking cessation intervention. U.S. research however, has indicated that psychologists are very unlikely to provide smoking related care and identified a number of barriers to care provision. No published research appears to have addressed this issue among Australian psychologists. This study sought to examine the smoking cessation care provided by a sample of Australian psychologists, and identify potential barriers.

Methods: A survey was administered to psychologists in one NSW region, recruited by email from local members of the APS and local area health service.

Results: 72 psychologists completed the survey. Few reported receiving any formal training in smoking cessation. Less than half of the respondents indicated assessing the smoking status of “all or nearly all” of their clients, and 25% reporting doing so with “none or almost none”. Reported levels of intervention, including referral for smoking care, were very low. Respondents rated the likelihood of their detecting smoking, and their role to intervene, confidence to do so and likelihood of intervening as lower for smoking than for several other health risk behaviours. Key barriers reported included a concern about negatively impacting the therapeutic relationship, lack of time, and lack of training and confidence to intervene.

Conclusions: Australian psychologists do not generally provide smoking cessation care. Redressing this situation will require some of the barriers identified to be addressed but also, critically, rectification of the current situation where intervention for tobacco smoking is excluded from Medicare reimbursement for psychological treatment.

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POSS-79 PREDICTORS OF SMOKING CHEMION AMONG ADULT SMOKERS IN MALAYSIA AND THAILAND: FINDINGS FROM THE INTERNATIONAL TOBACCO CONTROL SOUTHEAST ASIA SURVEY

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Limited mainly cross-sectional studies on smoking cessation have been reported in developing countries in Asia. The extent to which determinants of quitting would be similar to those found in Western countries is unclear. This study uses longitudinal data from the International Tobacco Control Southeast Asia Survey (ITC-SEA) to examine predictors of cessation behaviours among adult smokers in Thailand and Malaysia. In early 2005, 4,004 adult smokers (Malaysia: n=2,004; Thailand: n=2,000) completed wave 1. Wave 2 (2006) included all 2,426 (Malaysia, n=868; Thailand, n=1,558) were successfully followed up in the second wave in late 2006/early 2007. Results show that significantly more Thai than Malaysian smokers reported having made a quit attempt between waves 1 and 2 (73.8% vs. 45.2%, p<0.001). Among those who tried the success rate was higher in Malaysia (22.4%) than in Thailand (17.4%), but the difference was not significant in multivariate analysis (OR=0.89, 95% CI: 0.57-1.39). For both countries, intention to quit significantly predicted quitting attempts and included higher quitting self-efficacy, previous quit attempt lasting 6 months or less, and lower nicotine dependence, with health concerns being an additional factor for Thai smokers. Intention to quit, however, was not predictive of making a quit attempt in either country. Independent predictors of making quit attempts included higher quitting self-efficacy, being abstinence for 6 months or more in the past, and of lower nicotine dependence. Intending to quit within a month was also associated with increased smoking. The results suggest that several different maternal and paternal factors may contribute to general and specific ETS restrictions, and suggest individuals to target for ETS prevention and intervention efforts.

This study was funded by a grant from the Prevent Cancer Foundation.

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POSS-80 ASSESSMENT OF CIGARETTE SMOKING DURING PREGNANCY: THE USE OF BEHAVIORAL OBSERVATION AND FACTORS THAT PREDICT DENIAL

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Background: Rates of pregnancy smoking remain high, and attempts to effectively intervene are hampered by failure to identify pregnant smokers as many deny smoking. Biochemical assessment is often impractical, and clear cut-offsto distinguish pregnant smokers from those exposed to ETS are not well established.

Objective: The first goal was to determine the degree of pregnancy smoking denial compared with behavioral observation in a population with a high rate of pregnancy smoking. The second was to identify factors that predict denial in this population. Methods: Data from all women who gave birth in a rural county in Southern Appalachia over 2 years were obtained by chart review. Self-report of smoking status both throughout pregnancy and at delivery, and behavioral observation of smoking during the 3-5 day delivery hospitalization were recorded. Other data included sociodemographics and medical/lifestyle factors. Results: Based on behavioral observation, 42% of the 843 women were smokers. 8.2% of smokers denied smoking at hospital admission, while 16.2% denied throughout prenatal care. All who admitted smoking were observed smoking. Compared with those who admitted smoking, deniers were 3 times as likely to have education past high school. They were twice as likely to have had unemployment under (55%), had higher levels of quitting self-efficacy, being abstinence for 6 months or more in the past, and of lower nicotine dependence. Intending to quit within a month was also associated with increased smoking. The results suggest that several different maternal and paternal factors may contribute to general and specific ETS restrictions, and suggest individuals to target for ETS prevention and intervention efforts.

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AWARENESS OF, AND INTENTION TO USE, A STATE TOBACCO QUOTILE: DIFFERENCES BY GENDER AND BODY MASS INDEX

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Background: Overweight and smoking are linked to increased morbidity and mortality. Overweight smokers may have different cessation-related attitudes and behaviors. This study examined the association between BMI and smoking cessation among female and male smokers.

Methods: The Oklahoma Behavioral Risk Factor Survey (BRFS) monitors smokers' intentions to quit smoking, awareness of the Oklahoma Tobacco Helpline, and likelihood of calling the Helpline. Body Mass Index (BMI) was calculated using standard BMI cutpoints. Normal BMI category was the reference group. Four years of BRFS data (n=3381 current smokers) were examined to determine the association between BMI and the outcomes of interest: intention to quit smoking in the next 6 months, awareness of and likelihood of calling the Helpline. Logistic regression was used to calculate odds ratios (ORs) and 95% confidence intervals (CIs). Race, ethnicity, and age were included as covariates. Because BMI differences were significant for females and males, separate models were created for males and females.

Results: Male smokers were more likely to be overweight (41.8%) than females (28.4%) while prevalence of obesity was the same (24%). Among males, BMI was significantly associated with 6-month intention to quit (OR=1.32, 95% CI 1.11-1.57 for overweight and OR=1.34, 95% CI 1.08-1.65 for obese smokers). There was no association between BMI and intention to quit among female smokers. Among females, obese and overweight smokers were less likely to use a state tobacco quitline compared to normal weight smokers (OR=0.79, 95% CI 0.68-0.92 for overweight and OR=0.81, 95% CI 0.70-0.94 for obese smokers). When likelihood of calling the Helpline was examined, there was no association with BMI among female smokers; among male smokers, overweight and obese smokers were significantly less likely to call the Helpline for help quitting as compared to normal weight smokers (OR=0.64, 95% CI 0.50-0.83 and OR=0.53, 95% CI 0.39-0.72, respectively).

Conclusions: These data support a need for targeted marketing of state quitlines to increase use among the weight-related smokers.

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WEIGHT CONTROL EXPECTATIONS AMONG TREATMENT-SEEKING AFRICAN-AMERICAN SMOKERS: A CORRELATIONAL ANALYSIS

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African-Americans are disproportionately affected by tobacco smoking and obesity. This population suffers a disproportionate burden due to smoking and obesity-related diseases, including heart disease, stroke, and cancer. Among African Americans, smoking is a major public health problem. Many predictors of smoking initiation and escalation are already identified. However, less is known about how these factors interact. In the present study we investigated whether adolescents' personality traits moderated the impact of parental behaviors, and parental and peer smoking, on the development of adolescent smoking. Data were used from a five-wave prospective study in which 428 adolescents (aged 13 at baseline) and their families participated. Latent Growth Curve modeling was executed in order to establish individual developmental trajectories of smoking. Subsequently, we examined the predictive value of smoking-specific parenting and smoking behavior of parents and friends in relation to the development of adolescent smoking. Finally, we examined whether the relations between parental and peer behaviors on the one hand, and adolescent smoking on the other, were affected by Big Five personality traits of the adolescents. Findings suggest a need for research to better understand how personality traits may influence the development of adolescent smoking.

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Many predictors of smoking initiation and escalation are already identified. However, less is known about how these factors interact. In the present study we investigated whether adolescents' personality traits moderated the impact of parental behaviors, and parental and peer smoking, on the development of adolescent smoking. Data were used from a five-wave prospective study in which 428 adolescents (aged 13 at baseline) and their families participated. Latent Growth Curve modeling was executed in order to establish individual developmental trajectories of smoking. Subsequently, we examined the predictive value of smoking-specific parenting and smoking behavior of parents and friends in relation to the development of adolescent smoking. Finally, we examined whether the relations between parental and peer behaviors on the one hand, and adolescent smoking on the other, were affected by Big Five personality traits of the adolescents. Findings suggest a need for research to better understand how personality traits may influence the development of adolescent smoking.

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POS3-88 MISSED OPPORTUNITIES FOR TOBACCO USE CESSATION COUNSELING IN A PRIMARY CARE FACILITY IN SOUTH AFRICA

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Objective: To estimate the prevalence of screening for tobacco use in a primary health care clinic in Johannesburg, South Africa.

Methods: This was a cross-sectional study involving a random sample of patients over the age of 18 years who visited a doctor or nurse during the study period (n=500). Information obtained using an exit-interview questionnaire included patient’s age, gender, level of education, smoking and smokefree tobacco use status and intensity, reasons for seeking medical care and patient’s level of comfort about being asked and advised to quit tobacco use. Main outcome measure: Patient’s self-report of having been screened for tobacco use at the recent consultation and/or past consultations. Data analysis included the use of chi-square statistics, t-tests and multiple logistic regression analysis.

Results: Of the respondents, 73.4% were unemployed, 18.6% were pregnant, 14.9% were current smokers (37.7% men and 7.5% women) and 12.1% were smokers, subject to written informed consent and will be obtained. The frequency (9.2%) of the patients seen at this facility were asked about tobacco use at their recent consultation and 10.6% (53) claim to have been asked about their tobacco use in most or all their past consultations. Of those not screened, 88% indicated they would be “very comfortable” with tobacco use inquiry. Being screened for tobacco use was not significantly associated with gender, but those regularly screened tended to be younger and had smoked more intensely. In a multivariate analysis, the single most significant predictor of being screened for tobacco use at the recent encounter with a health professional was reporting having had a pregnancy-relat ed consultation (OR=2.87; 95%CI=1.12-7.37) as compared to medical conditions other than cardiovascular disease and HIV-related conditions.

Conclusions: Health care providers at this facility miss opportunities to provide effective tobacco use interventions to the majority of their patients.

No funding.

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POS3-88 PARENTAL CONCERN FOR MODELLING SMOKING BEHAVIOUR TO CHILDREN AND INTENTIONS TO QUIT SMOKING: FINDINGS FROM THE INTERNATIONAL TOBACCO CONTROL, POWER AND YOU INITIATIVE: FOUR COUNTRY SURVEY (ITC-4)

Sara C. Hitchcannon*, Geoffrey T. Fong, Mark P. Zanna, and Tara Elton-Marshall, University of Waterloo

Cessation initiatives, including cigarette warning labels and mass media quit campaigns, have highlighted the relation between parent and child smoking in order to motivate parents to quit. These initiatives typically warn parents that secondhand smoke affects their children. Little is known about smoking, therefore increasing the chances their children will smoke. To date, however, very little, if any, research has investigated whether parents’ concerns for modelling smoking smoke to their children is associated with their intentions to quit. In the International Tobacco Control (ITC) Four Country Survey, an annual cohort survey of adult smokers in four countries—Canada, the United States, the United Kingdom, and Australia—we identified 317 smoking parents who had no intentions to quit at time 1. Controlling for demographics and smoking history, we then assessed whether the extent of their concern for modelling smoking to children predicted whether they would hold intentions to quit one year later. The results indicated that 64% of parents with concerns regarding their children, including 65% of females and 62% of males. However, it was only for females that their concerns for modelling were a predictor of their intentions to quit smoking at time 2.

Main outcome measure: Parents’ self-report of having been screened for tobacco use at the recent consultation and/or past consultations. Data analysis included the use of chi-square statistics, t-tests and multiple logistic regression analysis.

Results: 52% (n=28) of the pulmonary TB patients were ever smokers (43% current smokers and 9% former smokers) and 62% (n=20) of the patients who attended the ITC-4 study had delayed (≥6 weeks) spu tum smear conversion after 6-8 weeks of ATT treatment. 53 smear/sputum positive pulmonary TB patient charts from April 2007 to April 2008 were reviewed; information on other co-variates such as socio-demographic and clinical correlates was collected, in addition to detailed smoking and TB history. Both bivariate and multivariable logistic regression analyses were performed using SAS statistical package.

Results: 52% (n=28) of the pulmonary TB patients were ever smokers (43% current smokers and 9% former smokers) and 62% (n=20) of the patients who attended the ITC-4 study had delayed (≥6 weeks) sputum smear conversion after 6-8 weeks of ATT treatment. 53 smear/sputum positive pulmonary TB patient charts from April 2007 to April 2008 were reviewed; information on other co-variates such as socio-demographic and clinical correlates was collected, in addition to detailed smoking and TB history. Both bivariate and multivariable logistic regression analyses were performed using SAS statistical package.

Conclusions: Active cigarette smoking is apparently associated with delayed sputum smear conversion beyond 6-8 weeks in Pulmonary TB patients on ATT, thereby increasing their infectivity status. Chest physicians should advise on smoking cessation to TB patients.

This is based on the first author’s (UAS) M.Sc. thesis submitted to the Trinity College Dublin in 2008. No funding.

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POS3-87 CROSS-SECTIONAL STUDY OF CIGARETTE SMOKE EXPOSURE IN EIGHT COUNTRIES

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The development of the scientific basis for global tobacco product regulation can be assisted by cigarette smoke exposure data from a wider range of countries since most current data come from North America and Europe. Cigarette smoke exposure can be estimated by the analysis of biomarkers in human body fluids, the measurement of human smoking behaviour followed by machine duplication or the analysis of spent cigarette filters and the calculation of human smoke yields from the filtration efficiency. Filter analysis enables the estimation of the nicotine and tar yields obtained by smokers in their everyday environment. Leading (by market share) products across the range of ISO tar yields were selected from Australia, Brazil, Canada, Germany, Japan, New Zealand, South Africa and Switzerland. At least fifty smokers were recruited per product to represent the demographics of consumers of the products being assessed. All smokers, ≥21 yrs of age and smoking ≥5 cigarettes per day, were asked to collect ≥15 filters from cigarettes they had smoked, subject to written informed consent and will be obtained. The collection (9.2%) of the patients seen at this facility were asked about tobacco use at their recent consultation and 10.6% (53) claim to have been asked about their tobacco use in most or all their past consultations. Of those not screened, 88% indicated they would be “very comfortable” with tobacco use inquiry. Being screened for tobacco use was not significantly associated with gender, but those regularly screened tended to be younger and had smoked more intensely. In a multivariate analysis, the single most significant predictor of being screened for tobacco use at the recent encounter with a health professional was reporting having had a pregnancy-related consultation (OR=2.87; 95%CI=1.12-7.37) as compared to medical conditions other than cardiovascular disease and HIV-related conditions.

Conclusions: Health care providers at this facility miss opportunities to provide effective tobacco use interventions to the majority of their patients.

No funding.

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POS3-87 SMOKE AND INFECTIVITY STATUS OF PULMONARY TUBERCULOSIS IN A DUBLIN-BASED UNIVERSITY HOSPITAL

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Background: Approximately 1.25 billion people smoke worldwide. An estimated 8.8 million individuals develop active Tuberculosis (TB) worldwide, and the incidence is increasing at 1% annually, with 1.7 million annual deaths. Recent evidence suggests a two-fold increased risk of TB in smokers when compared to never smokers. Ireland, a low TB burden country, reported 458 TB cases in 2006, with two-thirds of the cases being sputum/smear positive. 29% of the Irish population (≥15 years of age) smoke in 2007. TB patients on the anti-tubercular treatment (ATT) turn sputum/smear negative mostly by the end of 6-8 weeks. However, there is little information on the potential association between active smoking and the infectivity status of smear/sputum positive TB patients in Ireland on ATT. Method: A cross-sectional retrospective record-based hospital analysis was undertaken. 53 smear/sputum positive pulmonary TB patient charts from April 2007 to April 2008 were reviewed; information on other co-variates such as socio-demographic and clinical correlates was collected, in addition to detailed smoking and TB history. Both bivariate and multivariable logistic regression analyses were performed using SAS statistical package.

Results: 52% (n=28) of the pulmonary TB patients were ever smokers (43% current smokers and 9% former smokers) and 62% (n=20) of the patients who attended the ITC-4 study had delayed (≥6 weeks) sputum smear conversion after 6-8 weeks of ATT treatment. 53 smear/sputum positive pulmonary TB patient charts from April 2007 to April 2008 were reviewed; information on other co-variates such as socio-demographic and clinical correlates was collected, in addition to detailed smoking and TB history. Both bivariate and multivariable logistic regression analyses were performed using SAS statistical package.

Conclusions: Active cigarette smoking is apparently associated with delayed sputum smear conversion beyond 6-8 weeks in Pulmonary TB patients on ATT, thereby increasing their infectivity status. Chest physicians should advise on smoking cessation to TB patients.

This is based on the first author’s (UAS) M.Sc. thesis submitted to the Trinity College Dublin in 2008. No funding.

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**POS3-90**

**SOCIAL LINKAGES BETWEEN FRIENDS AND SIBLINGS: INFLUENCE ON ADOLESCENT SMOKING BEHAVIOR IN REAL TIME AND EVERYDAY SETTINGS**

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Objective: Although interpersonal interactions with friends and siblings are recognized as important psychosocial influences on adolescent smoking behavior, most studies to date have not examined how joint connections with friends and siblings impact smoking behavior.

Methods: 60 adolescent sibling pairs (drawn from a community-based family study) reported on their social interactions, affect, physical locations, smoking urges, and smoking behavior using electronic Ecological Momentary Assessment (eEMA). Each sibling pair completed 3 waves (baseline, 6-month follow-up, 12-month follow-up) of a 6-day eEMA protocol (with an average of 15.2 diary entries per day, per individual subject). eEMA report of smoking correlated .64 with salivary cotinine. Data were analyzed using Generalized Estimating Equations.

Results: Time spent with friends, and with siblings, each independently predicted smoking behavior at each wave. There was a synergistic effect of simultaneous interactions with both a co-sibling and friend. During these joint friend/sibling interactions, general rule-breaking behavior, negative affect, and sibling arguing increased along with smoking urges and cigarette smoking.

Conclusions: Adolescents at risk for smoking may form risk-promoting alliances with both siblings and mutual friends that are characterized by rule breaking behavior and negative affect. Prevention programs could consider targeting such social linkages in order to manipulate the social context of adolescent smoking.

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**POS3-92**

**WEIGHT CONCERN-QUIT ATTEMPT ASSOCIATIONS AMONG LOW INCOME, AFRICAN-AMERICAN MATERNAL SMOKERS ENROLLED IN SECONDHAND-SMOKE REDUCTION TREATMENT**

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Smoking-related weight concern is a barrier to cessation among women. Most studies have focused on mid-to-lower income white women. More research needed to understand how weight concerns influence smoking in lower income, minority women. This study hypothesized that reductions in smoking-related weight concern predicts greater likelihood of quit attempts and fewer cigarettes smoked per day at 8 weeks mid-treatment among low-income black women enrolled in an ongoing behavioral counseling trial to decrease maternal smoking and child second-hand smoke exposure. Participants were recruited through pediatric and community clinics in medically underserved neighborhoods as part of the larger trial. The 146 participants smoked an average of 6.37 (s=1.12) cigarettes per day at mid-treatment and were approximately 30 years old (±8.21 years). 40% had set a quit date and 84.5% reported a quit attempt. Logistic and multiple regressions analyzed predictors of quit attempts and cigarettes smoked/day. Change in weight concern was calculated as a difference score (mid-treatment minus baseline.) Controlling variables included home smoking bans, body mass index, depressive symptoms, support for quitting, and treatment assignment as interventions continued varying intensity of treatment about managing smoking and weight concerns. Eight predictors were entered by direct method into multivariate models. Weight concern change (OR = .58, p=0.02) and smoking ban (OR = 5.25, p=0.01) were the only quit attempt factors. Weight concern change was not a significant factor in the model predicting cigarettes smoked/day (beta = .53; p=0.07). Results suggest the potential influence of weight concern change and smoking bans on quit attempts during treatment in our sample of underserved maternal smokers. We will present preliminary, boverbier end-of-treatment data further examine this association. If consistent with mid-treatment data, this study will expand our understanding of a key smoking cessation barrier and can inform strategies for smoking behavior change in a population that bears high risk for tobacco-related morbidity/mortality.

Study was supported by grants to B. Collins from the National Cancer Institute (K07 CA093756 and R01 CA101583).

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**POS3-93**

**DIFFERENCES IN MOUTH-LEVEL NICOTINE DELIVERY WITH VARIATION IN CIGARETTE SMOKE PH**

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Background: In smoke, the free-base (non-protonated) form of nicotine is volatile, proportionately higher in high pH cigarettes and, in theory, would be more bioavailable. Solanesol is an organic compound present in tobacco cigarettes, which is filtered by the cigarette filter. Using filter solanesol levels as a marker, mainstream smoke nicotine delivery by filter cigarettes can be measured.

Methods: This study investigated the effect of variation in smoke pH on nicotine mouth-level intake per cigarette. We used machine testing for four reference brands under a range of smoking conditions, to generate filter solanesol and smoke nicotine concentrations. We conducted a randomized, single-blind, cross-over trial of the same four commercial cigarette brands matched on machine-smoked nicotine and tar yields, but varying substantially in smoke pH and proportion of nicotine that is free-base. We used “light” and menthol pairs of cigarettes and 93 subjects smoked the pair of cigarettes that matched their usual smoking preferences, one on each of two lab visits. The spent butts were analyzed for solanesol levels using LC/GC technique. The mouth-level nicotine exposure was estimated from the calibration study.

Results: After controlling for smoke pH levels (high/low), style of cigarettes (menthol pairs vs. regular), individual tobacco use variables (frequency & quantity of smoking), and congruence between self-definition as a smoker and actual smoking behavior. We hypothesized that length of smoking career indirectly affects smoking through congruence of persons’ perceptions of their smoking behavior and their actual behavior.

Methods: Data from 1470 youth participating in the Texas Youth Tobacco Awareness Program provided information in a variety of areas, including pre-program tobacco use levels and self-definition as a smoker or non-smoker. Data related to participant perceptions of peer network variables were collected throughout the program. Structural Equation Modeling was used to develop a best-fit model.

Findings: All hypothesized relationships were significant at the .05 level. Number of smoking friends and perceived peer norms about smoking formed a single peer network latent variable, but perceived peer support for cessation was not related to that latent variable, although it was related to amount of current tobacco use. Years of smoking appear to mediate peer network influences on current use. No significant path was found between years smoked & smoking congruence, but smoking congruence did have a direct effect on smoking behavior, such that less congruence was associated with an increased likelihood of smoking and a later predicted age of quitting.

Discussion: Peer influences seem to act through a variety of mechanisms to impact smoking behavior. These mechanisms will be described in greater detail. Additionally, these data provide evidence that helping youths to define themselves as smokers when they use tobacco may be key in helping them recognize a need to quit sooner.

Texas Department of State Health Services.

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Introduction: A 2005 Cochrane review of smoking relapse prevention interventions found no evidence for the effectiveness of any specific type of smoking relapse prevention intervention, but further trials have since been published.

Objective: To update the Cochrane review on effectiveness of interventions for preventing relapse to smoking.

Methods: We performed a comprehensive search using the same search strategy used in the original review to identify randomized trials of behavioral and pharmacological studies of smoking relapse prevention, published up to October 2007. We included trials that compared relapse prevention interventions to no intervention control, or that compared a cessation programme with additional relapse prevention components to a cessation programme alone. Studies were screened and data extracted independently by two authors. We present abstinence as point prevalence or continuous abstinence at three follow-up time points — 1–3 months post randomization, 6–9 months post randomization, and 12–18 months post-randomization. Random effect meta-analysis was used to estimate pooled odds ratios (OR) with 95% confidence intervals (CI). Participation rates (≥50%) at follow-up (t=0-2005) were included in the updated review. We analyzed separately studies that randomized abstainers (n=35), and studies that randomized smokers (n=17) and present here findings from the former analysis only. We detected no benefit of behavioral interventions for relapse prevention. We however detected a significant effect for using bupropion (odds ratio 1.50 (95% CI 1.05-2.13) P=0.03; 1.37 (95% CI 1.08-1.73) P=0.009, 1.34 (95% 1.06-1.70) P=0.01 at the three follow-up time points respectively. There was also evidence for the effectiveness of other pharmacotherapies which was less clear due to the relatively few studies available.

Authors' Conclusions: Our findings suggest that some pharmacotherapies, particularly bupropion may be effective treatments for relapse prevention in smokers who are abstinent from smoking after having received smoking cessation treatent.

This project was funded by the NHS R&D Programme Health Technology Assessment Programme (Project number 06/32/01).

CORRESPONDING AUTHOR: Shade Agboola, Research Associate, University of Queensland, School of Population Health, Australia.

POS3-94 A SYSTEMATIC REVIEW TO UPDATE AND AUGMENT THE COCHRANE REVIEW OF THE EFFECTIVENESS OF SMOKING RELAPSE PREVENTION INTERVENTIONS


POS3-95 AUSTRALIAN SMOKERS' INTEREST IN USING LOW NITROSAMINE SMOKLESS TOBACCO PRODUCTS

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It is controversial whether it would be good public health policy to encourage smokers to switch to less harmful alternatives such as low nitrosamine smokeless tobacco (SLT). Epidemiological modelling indicates that there would be major public health gains if a substantial number of current smokers switched. However, the current ban on the commercial sale of these products in Australia is a barrier to the introduction of this harm reduction strategy. In assessing whether allowing domestic sales of low nitrosamine SLT products in Australia would have a positive impact on public health we need to know how many smokers and non-smokers would use these products and whether smokers would use them instead of smoking cigarettes or only use them when they could not smoke (“dual use”). We addressed these issues by conducting a cross-sectional survey of 400 current Australian daily smokers using computer-assisted web interviewing methods. The survey measured: smoking history, awareness of SLT, prevalence of current and former SLT use, beliefs about the relative harmfulness of SLT compared to cigarettes, willingness to try SLT and intended pattern of use (full substitution for cigarettes or dual use). Two thirds of the smokers had heard of SLT and 13% of these had used SLT. Only 15% believed SLT was less harmful than cigarettes. A quarter stated they were likely or very likely to purchase SLT if it was available in Australia. Most smokers who were willing to try SLT indicated they would use it to help them quit smoking (66%); only 9% indicated they would use it as a short-term substitute for only when they couldn’t smoke. We also report on the characteristics of those smokers who were willing to try SLT and the impact of price on willingness to try SLT. This study provides important preliminary data on the potential usefulness of SLT for harm reduction in Australia.

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POS3-96 PERCEIVED PRIORITIES FOR PREVENTIVE SERVICES: CHANGE BETWEEN 1996 AND 2006 IN A GENERAL POPULATION SURVEY

Jean-François Etter*, University of Geneva.

Aim: To assess change between 1996 and 2006 in opinions of the general public on priorities for prevention.

Methods: Postal questionnaire surveys in 1996 and 2006, in representative samples of the general population of Geneva, Switzerland. Participants indicated for which health problem prevention resources should be spent in priority, for a list of 13 health problems.

Results: There were 742 participants in 1996 (response rate 75%) and 1,487 in 2006 (response rate 76%). According to participants, in 2006, prevention from the former analysis only. We detected no benefit of behavioral interventions for relapse prevention. We however detected a significant effect for using bupropion (odds ratio 1.50 (95% CI 1.05-2.13) P=0.03; 1.37 (95% CI 1.08-1.73) P=0.009, 1.34 (95% 1.06-1.70) P=0.01 at the three follow-up time points respectively. There was also evidence for the effectiveness of other pharmacotherapies which was less clear due to the relatively few studies available.

Authors' Conclusions: Our findings suggest that some pharmacotherapies, particularly bupropion may be effective treatments for relapse prevention in smokers who are abstinent from smoking after having received smoking cessation treatment.

This project was funded by the NHS R&D Programme Health Technology Assessment Programme (Project number 06/32/01).

CORRESPONDING AUTHOR: Shade Agboola, Research Associate, University of Queensland, School of Population Health, Australia.

POS3-97 SPITTERS AND SMOKERS: ANALYSIS OF CIGARETTE SMOKE AMONG U.S. ADULT SMOKELESS TOBACCO USERS


Objective: Although smokeless tobacco (ST) use in the U.S. is relatively low compared with cigarette smoking, more needs to be known about the fundamental use patterns of ST users, particularly as they relate to cigarette smoking. Key data regarding the prevalence and characteristics that define populations of combined users, as well as the health effects of combined use, is largely absent.

Method: We assessed changes in smoking, combined use patterns, and health-related characteristics of ST users from 1996 to 2006 using the ongoing Tobacco Use Supplement to the Current Population Survey (TUS-CPS).

Results: Ninety-three percent of U.S. adult ST users were male in 2006, 88% were non-Hispanic Whites, and 75% lived in the Midwest or the South. In 2006, 29.4% of U.S. adult ST users also used cigarettes, up from 22.6% in 1995. In 2003, among ST users who smoke, 19.3% smoked cigarettes everyday; 7.6% smoked on some days. In 2003, 6.3% of U.S. adults were former ST users, 2.6% were former ST users in 1995/96.

Conclusions: Results reveal that a substantial proportion of ST users also smoke cigarettes. This pattern is of concern because specific health effects of combined use are not known and dual users may be more highly dependent on nicotine. The proportion of ST users who also smoke cigarettes rose from 1995 to 2000 and this increasing rate of dual use needs to be monitored given the introduction of new ST products, and the increasing marketing of ST and dual use of tobacco products. Tobacco cessation interventions need to address dual use.

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Factors Associated with South African Smokers’ Intention to Quit Smoking

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Objective: Behavioural intention is the most proximal determinant of behaviour change. This study therefore sought to determine the factors associated with intent to quit smoking among South Africans.

Method: This involved an analysis of a national representative sample of South African smokers 16yrs (n=689) who participated in the 2007 South African Social Attitude Survey (N=2,890). In addition to socio-demographic data, the information obtained through an interviewer-administered questionnaire included current and past tobacco use patterns, experiences of smoking restrictions at home and at work. Smokers were classified as "contemplators" if they had indicated an intent to quit within 6 months. Respondents also indicated their level of confidence in successfully quitting (i.e., self-efficacy with score range; 1-4). Nicotine dependence was measured using the heaviness of smoking index (HSI4).

Results: During 2007, smoking prevalence was 20.9% (95% CI = 18.8% - 23.2%). Of the current smokers, 15.3% are nicotine dependent (ND), 55.6% are planning to quit, but only 19.7% were contemplators. Self-efficacy was lower in ND smokers when compared to MD smokers (z = -2.42, p<0.01). ND smokers were less likely to be planning to quit at all, but were not significantly less likely to be contemplators. After controlling for self-efficacy and other potential founders, ND was not associated with intentions to quit. When compared to those over 55 years, those 25-34 years were significantly more likely to be contemplators (OR=2.38; 1.04-5.44). Other factors positively associated with being in the contemplation stage included past quit attempts (OR=2.29; 1.3-4.66), history of cutting-down smoking intensity (OR=2.11; 1.11-4.00) and reporting higher self-efficacy (OR=2.54; 1.70-3.64). Furthermore, while cost concern and workplace restrictions were additionally associated with planning to quit at all, the history of cutting-down was not significantly associated with this earlier stage of quitting.

Conclusions: Smoking cessation counseling with or without pharmacotherapy should be directed at supporting and/or increasing South African smokers’ self-efficacy to quit.

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Tobacco Use among the Parents of Adolescent Smokers


Extensive research has shown that teens whose parents smoke have a much greater chance of becoming smokers than whose parents do not model this behavior. In fact, Kold and Merlmeister (2004) found that children who have at least one parent who smokes are two and a half times more likely to become smokers than teens whose parents do not smoke. Additionally, one study has found that two and a half times more likely to smoke cigarettes on a regular basis than children whose parents are non-smokers. In addition, parental smoking has been shown to significantly increase the chances of teen smoking in both early and late adolescence (Hill et al., 2005). Thus, it seems likely that adolescent smokers would be more likely to be embedded in families that smoke. However, little research has reported on the smoking habits of the families of adolescents who smoke. The purpose of the current report is to experiment with smoking cigarettes and two and a half times more likely to smoke cigarettes on a regular basis than children whose parents are non-smokers. In addition, parental smoking has been shown to significantly increase the chances of teen smoking in both early and late adolescence (Hill et al., 2005). Thus, it seems likely that adolescent smokers would be more likely to be embedded in families that smoke. However, little research has reported on the smoking habits of the families of adolescents who smoke.

Further to the implications of these high rates of family smoking use is needed in order to develop effective smoking cessation programs aimed at teens.

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Assessment of the Implementation of the NAQC Minimal Data Set among North American Quitlines


Objective: The North American Quitline Consortium (NAQC) was formed in 2004 as a member organization to promote evidence-based quitline services across North America. In May 2006, NAQC finalized a Minimal Data Set (MDS) for evaluating quitlines. The MDS consists of standardized intake and follow-up questions. All 62 public quitlines in North America have implemented the MDS. To understand how consistently quitlines have implemented the MDS, an assessment was undertaken in 2007.

Methods: The MDS Assessment was fielded in July 2007 and completed in March 2008. It assessed both the process of implementing the MDS (n=55/62, 89%), and the fidelity with which each question was implemented by each quitline (n=57/82, 92%).

Results: Despite some challenges, all respondent quitlines have implemented at least some of the MDS intake questions and the vast majority (93%) implemented the MDS follow-up questions. Further, the intake and follow-up questions were implemented without significant disruption to core services and improved data quality. Implementing the MDS encouraged some quitlines to develop follow-up evaluations which should improve quitline quality in the future. Of respondent quitlines, 77% use the required MDS intake questions with consistent fidelity, with more than 80% using the exact MDS phrasing. For follow-up, 67% of respondent quitlines do the same, with 56% using exact MDS phrasing. In addition to differences in eligibility and sampling for both intake and follow-up, there were an additional seven different criteria used to select populations for evaluation, including registration for services (25%), nature of services provided, (30%), and purpose of call (43%). The significant variation in the population eligible for follow-up, and the lack of standardization underscores the importance of using caution before comparing quitline data.

Conclusions: While there are important challenges with specific MDS questions and with response categories used in general, the MDS assessment demonstrates that North American quitlines have made considerable progress towards collecting standardized evaluation data at both intake and follow-up.

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Senior Dental and Dental Hygiene Students’ Practices and Barriers to Treating Tobacco-Dependent Patients at Loma Linda University School of Dentistry (LLUSD)


Background: Little is known about the content of tobacco-dependence education and skill training interventions in dental schools’ curricula and their students’ competency to treat tobacco users.

Methods: After emailing the students an introductory letter, a 26-item, online survey was sent to 185/187 dental and 374/42 dental hygiene senior students (July 2008) identified their self-reported treatment of tobacco-dependent patients. Both groups were re-surveyed in February 2009 to ascertain the effect of 2008-09 dental school curriculum and clinic policy changes. Results were analyzed using SPSS. Baseline summary statistics are presented.

Results: Dental and hygiene students similarly documented tobacco use, provided advice to quit (86%) and discussed tobacco-related hazards (60%). However, hygiene students counseled smokers for a longer time, 8.8 ± 6.5 min (hygiene v dental students, p<0.0004), “always/often” documented quit attempts (65% v 12%, p<0.001), “always/often” discussed specific strategies (70% v 22%, p<0.001) and pharmacotherapy treatment options (41% v 12%, p<0.001), and “always/often” showed the patient the oral damage from smoking (59% v 19%, p<0.001) than dental students. Dental hygiene students were more likely to refer patients to tobacco treatment and follow-up (p<0.001). Patient resistance/compliance; the lack of time were the most commonly cited barriers to tobacco treatment in dental clinic (approximately 70% and 60% respectively). Dental students cited lack of reimbursement and referral resources as medium/large barriers more often than hygiene students (32% v 12%, p<0.001, and 56% v 27%, p<0.003).

Conclusions: Although senior dental and dental hygiene students both reported they “asked and advised” about smoking, the hygiene students were more involved in the counseling, treatment and prevention aspects of tobacco use during dental care. We address these concerns for faculty development and comprehensive curriculum revision to provide tobacco treatment as part of routine dental care in both dental and dental hygiene schools.

This study was conducted at the Loma Linda University School of Dentistry and funded by the Palo Alto Center for Pulmonary Disease Prevention.

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POS3-102  MIXED MODES IN THE INTERNATIONAL TOBACCO CONTROL (ITC) NETHERLANDS SURVEY: DIFFERENCES BETWEEN CASI AND CASI ON SMOKING RELATED QUESTIONS

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Objectives: The ITC Project studies the effects of tobacco control policies in 19 countries. The ITC Netherlands Survey, which began in 2008, differs from other ITC surveys in its use of a mixed mode design. Some respondents were interviewed by random digit dialed telephone methods (CATI), as in other high-income countries, but most respondents were interviewed using panel-based computer assisted self-interviewing (CASI). Finding ways to systematically study the effects of mixed mode surveys and account for them in analyses will create new opportunities to enlarge the ITC Project to countries with a limited budget. The objective of this study was to assess the direction and magnitude of several mode effects and to test for possible moderating influences of age, gender, and education.

Methods: Wave 1 of the ITC Netherlands Survey was completed by 404 CATI and 1,820 CASI respondents in March - April 2008. Mode effects were tested using binary logistic regression analyses in which the demographic variables on which the two samples differ significantly and the interaction with gender, age, and education were predictor variables.

Results: In our study, CATI respondents showed more socially desirable responding, extreme responding, acquiescence, consistent answering, recency and primacy effects, and use of the “other” option than did CASI respondents. CASI respondents showed more midpoint responding and use of the “don’t know” option. These mode effects were stronger among lower educated respondents. Age and gender also acted as moderators, but these effects were not consistent in direction.

Conclusions: Our analyses suggest that CASI methods yield responses with more favourable characteristics, compared to CATI. However, the validity of the responses will depend on the representativeness of the CASI panel. As CATI surveys continue to become more difficult and expensive, it is important to test the value of less expensive CASI methods in tobacco research.

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POS3-103  INTERNATIONAL DIFFERENCES IN USE AND EFFECTIVENESS OF SMOKING CESSATION SUPPORT: FINDINGS FROM THE ITC FOUR COUNTRY SURVEY

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Objectives: ITC data have previously shown that UK smokers are less likely to attempt to quit, but remain abstinent for longer, than smokers in the US, Australia and Canada. Smokers in the UK and US are more likely to make use of cessation support than smokers in Australia and Canada. This study examines the effect of support availability on uptake, compares the effectiveness of different types of support, and explores the extent to which use of support may explain international differences in abstinence.

Methods: Data on quitting behaviour and use of support were obtained for all smokers enrolled in the ITC Four Country Survey. Data from successive surveys were pooled and generalized estimating equations were used to determine the relative odds that individuals in each country made use of different types of support (including cessation clinics, telephone helplines, internet resources and pharmacotherapy), the relative odds that users of each type of support remained abstinent for at least 4 weeks, and to explore between-country differences in the effectiveness of each type of support. Further analyses explored the extent to which the use of these services is affected by density of service provision and awareness of their availability among smokers.

Results: Among those who made attempts, and following adjustment by age, sex and dependence, UK smokers were significantly more likely to use clinics and pharmacotherapy than smokers in the other countries, less likely to use internet based resources and as likely to use telephone support. Users of clinics, pharmacotherapy and telephone support were more likely to be abstinent at 4 weeks, but users of Internet support were not. However, mutually adjusted models did not show that use of help accounted for the observed country effect on abstinence.

Conclusion: Our findings suggest that whilst the use of support increases abstinence, differing rates of uptake do not explain between-country variation in abstinence. We discuss possible alternative reasons, including reporting biases, and the possibility that the availability of support may facilitate cessation purely through knowing it is there if needed.

The ITC Four Country Survey was funded by grants from the National Cancer Institute of the United States (through R01 CA 100362 and through the Roswell Park Transdisciplinary Tobacco Use Research Center, P50 CA111236), Robert Wood Johnson Foundation (045734), Canadian Institutes of Health Research (57897), National Health and Medical Research Council of Australia (365903 and 450110), Cancer Research UK (C312/A3726), Canadian Tobacco Control Research Initiative (014578), with additional support from the Ontario Institute for Cancer Research and the Centre for Behavioural Research and Program Evaluation, National Cancer Institute of Canada/Canadian Cancer Society.

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Objective: This study aims to replicate and further explore findings from West and Sohal that over half of all quit attempts are unplanned and that unplanned attempts are more likely to result in long-term cessation than planned ones. They propose that stopping smoking might better be thought of as a catastrophic event, triggered when cues to act exceed some threshold of motivation. In contrast to such attempts, quit attempts that are planned ahead may indicate a lower level of commitment, explaining the lower observed quit rates.

Methods: Data are from Waves 5 and 6 of the ITC Four Country Survey and are from those smokers from our annual sample of around 8000 who reported quit attempts since the previous wave. They were asked when they chose their quit date, and whether they had been seriously thinking about it before or if it was a spur of the moment decision.

Results: Including both attempts decided on the day (39% Wave 5) or after having not smoked for some time for some other reason (15%) confirmed that about half of quit attempts are spontaneous although most of these had been thinking about quitting for some time beforehand. There was no clear superiority of spontaneous quits on abstinence 30 days later. Abstinence was lowest for those with less than 1 week of planning and was unrelated to whether they had been seriously thinking about stopping or made a spur of moment decision to stop. In attempting to reconcile our data with the existing literature, we explored the role of recall and found some effects. Rates of quitting for attempts decided on the day were relatively lower for recent attempts.

Conclusions: The state of mind with which a person enters a quit attempt may affect longer term outcomes, but not in any simple manner. However, we cannot rule out an alternative explanation of differential memory for quit attempts as a function of the amount and nature of preceding activity.
POS3-106 ARE PATTERNS OF SMOKING CESSATION AND RELATED BEHAVIOURS ASSOCIATED WITH SOCIOECONOMIC STATUS? DATA FROM THE INTERNATIONAL TOBACCO CONTROL (ITC) FOUR COUNTRY SURVEY

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Existing research has identified considerable socioeconomic disparities for smoking and cessation: lower socioeconomic status (SES) groups have higher rates of tobacco use, are less likely to successfully quit, and may also be less likely to intend to or attempt to quit. However, results are inconsistent for some quitting-related outcomes, and little is known about how socioeconomic disparities may vary across countries. This study examined the extent to which SES was associated with smoking cessation and related constructs among representative samples of smokers in Canada, the US, the UK, and Australia, using data from the first five waves (2002-2006) of the ITC Four Country Survey (35,532 observations from 16,458 respondents). Generalized estimating equations modeling was used to examine whether education and income were related to intentions to quit (any, and within the next six months), incidence of quit attempts, smoking abstinence (for at least one, six and 12 months), and reduction in cigarette consumption by at least half. Potential differences in the associations over time and between countries were also considered. In addition, logistic regression modeling examined associations between education and income and reasons for quitting and use of cessation assistance, using a cross-sectional sample of the most recent survey wave. Respondents with higher education were more likely to intend to quit, have made a quit attempt, and be abstinent for at least one and six months, and those with higher income were more likely to intend to quit and be abstinent for at least one month. Income and education were not associated with 12-month abstinence or reduction in daily cigarette consumption. Between-country differences in the outcomes were also identified. Associations were stable throughout the time period under study. Socioeconomic and between country variation was also found in the cross-sectional analyses of use of and access to cessation assistance and reasons for quitting. The results suggest that socioeconomic disparities exist at multiple stages in the pathway to smoking cessation.

The ITC Four Country Survey was funded by grants from the National Cancer Institute of the United States (through R01 CA 100362 and through the Roswell Park Transdisciplinary Tobacco Use Research Center, P50 CA111236), National Health and Medical Research Council of Australia (265903), Ontario Institute for Cancer Research (014578), with additional support from the Ontario Institute for Cancer Research and the Centre for Behavioural Research and Program Evaluation, National Cancer Institute of Canada/Canadian Cancer Society. The first author also received student support through a CIHR Canada Graduate Scholarship Master’s Award, a CIHR Strategic Training Program in Tobacco Research (STPTR) Fellowship, and an Ontario Graduate Scholarship.

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POS3-107 QUANTITATIVE ASSESSMENT OF SECONDHAND SMOKE TRANSFER IN MULTI-UNIT DWELLINGS

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Objective: The implementation of policies prohibiting smoking in public places, including bars and restaurants, has left personal living spaces as primary sources of secondhand smoke (SHS) exposure for many individuals. The potential for involuntary exposure is particularly apparent among those who reside in close proximity to one or more other in multi-unit dwellings. Therefore, the objective of this study was to determine whether SHS transfers from apartment units in which smoking occurs to smoke-free units within the same building.

Methods: TSI SidePak AM510 Personal Aerosol Monitors were used to assess real-time levels of PM2.5 (micrometers per cubic meter), a marker for SHS, inside 18 apartments within 5 multi-unit buildings in Western New York. The sample was comprised of units in which smoking occurred daily (n=10) and in which smoking was prohibited (n=8). A monitor was placed in the primary living area of each unit and another was placed in the hallway of each building. Participants kept daily logs of smoking and other activities that could confound air quality levels. Real-time outdoor PM2.5 levels were obtained from a nearby Department of Environmental Health Monitoring Station. Environmental Protection Agency standards for outdoor air were used to classify mean PM2.5 levels.

Results: Air quality assessments encompassed 257 cigarettes and 656 hours among smoking units and 579 hours among smoke-free units. The average PM2.5 level observed in smoking units was 172 micrograms per cubic meter compared to 72 micrograms per cubic meter in smoke-free units. Time-weighted average levels observed in hallways were 68; these levels are deemed “very unhealthy” and “unhealthy,” respectively, according to EPA standards for outdoor air. The average PM2.5 level observed in smoke-free units was 35 micrograms per cubic meter, nearly three times the average outdoor level of 13.

Conclusions: The air inside apartments in which smoking was polluted exceeded acceptable standards for clean air. Elevated levels were also observed in adjoining smoke-free units and hallways assessed during the same time period. The implementation of a smoke-free building policy could be an effective means with which to improve indoor air quality.

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POS3-108 EVALUATION OF SMOKEFREE ENGLAND: RECENT FINDINGS FROM THE INTERNATIONAL TOBACCO CONTROL POLICY EVALUATION (ITC) PROJECT

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Background: To evaluate how England’s nationwide smokefree law, which came into effect on 1st July 2007, impacted people’s exposure to secondhand smoke (SHS), support for smokefree policies, hospitality patronage patterns, and smoking cessation indicators.

Methods: A longitudinal telephone survey of nationally representative samples of smokers (n=1,163) and non-smokers (n=188) in England who were interviewed before the English law (2006) and one year later after the law (2007).

Results: Dramatic declines in the observance of smoking in pubs (88% to 5%) were found after the English smokefree law with similar reductions in seeing smoking in restaurants and workplaces. Rates of having a completely smokefree home increased from 25% to 35% among English smokers and 54% to 59% among non-smokers. Support for smokefree policies in pubs among smokers increased from 18% to 43% and among non-smokers support increased from 34% to 65%; similar increases in support were observed for smokefree restaurants and workplaces. For both smokers and non-smokers, the frequency of going to pubs and restaurants was comparable before and after the law. No differences in the percent of smokers that reported making quit attempts, using stop smoking medications, or quitting successfully were observed before and after the smokefree law.

Conclusion: The English smokefree law has been a success; the air is cleaner, people support the law, and there is no evidence of adverse economic consequences to their hospitality industry. These favorable results are very consistent with those of smokefree laws implemented in Ireland and in Scotland.

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POS3-110 THEORY-BASED PSYCHOSOCIAL INFLUENCES ON YOUNG ADULT SMOKING: A LONGITUDINAL STUDY

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Throughout most parts of the world, young adults have the highest smoking prevalence of all age groups. There is a lack of long-term and large cohort studies of psychosocial influences on young adult smoking escalation. Such rigorous research can inform development of interventions to prevent young adult smoking. According to the Theory of Triadic Influence (TTI; Flay et al., 1999), a major theory pertinent to the escalation of smoking behavior that has rarely been applied to young adult smoking, the three primary streams of psychosocial influences on smoking escalation are: (1) social, (2) attitudinal, and (3) intrapersonal. In a population-based longitudinal cohort sample of 6,448 individuals residing in Washington State, major TTI-based variables from each of these three streams of influence were self-reported at baseline (age 18), and subsequent escalation to daily smoking between ages 20 and 28 (10-year retention: 84%) were reported. Results of logistic regression models showed that age 18 variables from each of the major streams were predictive of a higher odds of escalating from less than daily smoking at age 20 to daily smoking by age 28, including a 3.08 (95% CI: 2.22, 4.27) times higher odds for each friend’s smoking (social stream), a 2.06 (95% CI: 1.47, 2.94) higher odds for positive outcome expectations toward smoking (attitude stream), and a 1.70 (95% CI: 1.19, 2.44) times higher odds for thrill-seeking (intrapersonal stream). There were no significant differences between the level of influence of each of these streams of all (p > .05). Results suggest that the TTI model is well-supported in the context of young adult smoking escalation and suggest that intervening on social (e.g., friend’s smoking), attitudinal (e.g., positive outcome expectations), and intrapersonal factors (e.g., thrill seeking) at age 18 would each be potentially valuable ways to prevent young adult smoking escalation.

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POS3-111 IMPACT OF A SOCIAL COGNITIVE THEORY-BASED ADOLESCENT SMOKING CESSATION INTERVENTION ON HYPOTHESIZED MECHANISMS OF CHANGE

Jonathan Bricker, Ph.D.*, Jingmin Liu, M.S., and Arthur V. Peterson, Ph.D.

Theory-based behavioral interventions for adolescent smoking cessation are being tested to address the huge public health problem of adolescent smoking. Determining whether an intervention impacts mechanisms of smoking cessation is critical for theory testing and determining an intervention’s potential to help participants quit smoking. Yet little is known about the impact of adolescent smoking interventions on their mediators (Sussman et al., 2006). In the Hutchinson Study of High School Smoking, smoker participants (n = 2,151) were proactively identified via their responses to a baseline survey administered to 93% (12,141/13,042) of enrolled high school juniors in a two-arm group randomized trial involving 50 schools (25 in intervention arm, 25 in control arm). The Social Cognitive Theory (SCT)-based counseling intervention, delivered via counselor-initiated telephone calls, integrated Motivational Interviewing (MI) and Cognitive Behavioral Skills Training (CBST). The 2,151 smoker participants’ SCT-based mediators were self-reported at 12 months post-intervention eligibility, at age 19, with 89% participation. Analyses methods were linear regressions in which the intraclass correlation between smokers in the same school was accommodated via GEE. Among male daily smokers, the intervention impacted these mediators: compared to the control group, the intervention group reported higher commitment to quitting (10% change; p = .01), better skills for managing stress that triggers smoking (9% change; p = .03), and lower perceived acceptability of smoking (34% change; p = .0004). Among female less than daily smokers, the intervention group reported higher commitment to quitting (5% change; p = .01), importance to quit (5% change; p = .03) & social norms to quit (18% change; p > .0001). The intervention did not significantly impact any SCT-based mediators for male less than daily smokers and female daily smokers. Results suggest that the intervention was effective among male daily smokers and female less than daily smokers, in changing important mediators hypothesized to underlie smoking cessation. Theory and practice implications of results will also be discussed.

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POS3-112 GENDER DIFFERENCES IN SEXUAL RISK TAKING AND SMOKING ACCELERATION IN ADOLESCENTS

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Adolescent smoking is often accompanied by a number of comorbidities (e.g., substance use). However, much less is known about the relationship between adolescent smoking and risky sexual behavior (RSB). For girls especially, smoking may be a behavioral risk marker for engagement in RSB. The aim of the current study was to investigate the relationship between longitudinal patterns of smoking and RSB among a cohort of adolescents at risk for smoking progression. Participants were 1263 adolescents (715 females; mean age at baseline = 15.6 yrs; 56.5% white) who were part of a natural history study of the social-emotional contexts of adolescent smoking patterns. Measures of RSB (at baseline, 6-, 15-, and 24-months) included number of lifetime partners, age of first intercourse, drinking prior to intercourse and condom usage. Longitudinal smoking patterns were developed through the use of latent growth curve analysis, which identified five primary groups: 1) nonsmokers; 2) triers; 3) intermittent smokers; 4) low level; and 5) high escalation smokers. A repeated measures analysis of variance examined how the number of lifetime sexual partners varied by smoking trajectory. As hypothesized, there was a gender by smoking trajectory interaction on number of lifetime sexual partners (F = 13.30, p < .01). Although both males and females showed a linear increase in number of sexual partners over time (all p’s < .01), only females showed a significant difference between smoking trajectories on number of sexual partners (F = 9.90, p < .01). For females, higher trajectory groups had consistently greater numbers of sexual partners across time points. Results from this study suggest that although both males and females increase in number of sexual partners over time, patterns of smoking might only serve as a marker for RSB in females. That is, the rise in RSB over time in males may not be predicted by their smoking behavior. Future directions include examining whether the gender by smoking interaction extends across other indices of RSB. A thorough understanding of how smoking relates to RSB in adolescents might allow for more targeted STD and HIV prevention efforts.

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The objective of this work was to study the process of angiogenesis in the adult male zebra finch heart tissue as a function of nicotine (angiogenic agent) exposure. Nicotine imparts multiple effects in both human and animal models, ranging from cognitive impairment to cognitive enhancement, from neuroprotection against toxins, to its well-known attribute, craving and addiction. Agonists of the nicotinic acetylcholinergic receptors are currently studied for their beneficial effects in some neurological disorders including Alzheimer Disease and chronic pain. Consideration of chronic nicotine replacement therapy in these patients is suggested. The zebra finch model is used in our laboratory to study the acute and long-term effects of nicotine on cognitive functioning. Before we are able to study the long-term effects of nicotine on cognition and whether chronic nicotine replacement therapy can be used in our model, we needed to define the acute effects of nicotine on the heart tissue of the finch. The present study was necessary as no information is currently available on the acute effects of in vivo nicotine exposure on heart tissue. The following doses of nicotine were given to adult male zebra finches, twice a day for 7 consecutive days: 0.054, 0.18 and 0.54 mg/kg s.c. We demonstrated in an earlier study that this dose regimen induced significant values of both nicotine and cotinine in zebra finch fecal samples. Six hours following the last dose of nicotine, animals were sacrificed by an overdose of Equithesin (0.06 ml/kg, i.m.). Mason’s trichrome staining procedure was used to detect connective tissue proteins (such as collagen) in heart sections (20 µm thickness) of control and experimental animals. Our results show that nicotine induced dose dependent in vivo morphologic effects on collagen tissue in the heart. The regulation of extracellular collagen levels is dependent on a dynamic balance between the rates of synthesis and degradation. A proteomic analysis of the heart tissue is used to examine this morphologic effect. The results of this study will contribute to an understanding of the underlying mechanism of nicotine-induced heart diseases.

S.L.T. Cappendijk is funded by the James and Esther King Biomedical Research Program: 06IRR-02 M.I. Rodriguez is funded by the Women in Math Science and Engineering (WIMSE) program, Florida State University.

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The objective of this work was to study the process of angiogenesis in the adult male zebra finch heart tissue as a function of nicotine (angiogenic agent) exposure. Nicotine imparts multiple effects in both human and animal models, ranging from cognitive impairment to cognitive enhancement, from neuroprotection against toxins, to its well-known attribute, craving and addiction. Agonists of the nicotinic acetylcholinergic receptors are currently studied for their beneficial effects in some neurological disorders including Alzheimer Disease and chronic pain. Consideration of chronic nicotine replacement therapy in these patients is suggested. The zebra finch model is used in our laboratory to study the acute and long-term effects of nicotine on cognitive functioning. Before we are able to study the long-term effects of nicotine on cognition and whether chronic nicotine replacement therapy can be used in our model, we needed to define the acute effects of nicotine on the heart tissue of the finch. The present study was necessary as no information is currently available on the acute effects of in vivo nicotine exposure on heart tissue. The following doses of nicotine were given to adult male zebra finches, twice a day for 7 consecutive days: 0.054, 0.18 and 0.54 mg/kg s.c. We demonstrated in an earlier study that this dose regimen induced significant values of both nicotine and cotinine in zebra finch fecal samples. Six hours following the last dose of nicotine, animals were sacrificed by an overdose of Equithesin (0.06 ml/kg, i.m.). Mason’s trichrome staining procedure was used to detect connective tissue proteins (such as collagen) in heart sections (20 µm thickness) of control and experimental animals. Our results show that nicotine induced dose dependent in vivo morphologic effects on collagen tissue in the heart. The regulation of extracellular collagen levels is dependent on a dynamic balance between the rates of synthesis and degradation. A proteomic analysis of the heart tissue is used to examine this morphologic effect. The results of this study will contribute to an understanding of the underlying mechanism of nicotine-induced heart diseases.

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Ovarian hormones may underlie some of the sex differences in the central effects of nicotine. Context and environmental cues associated with smoking or nicotine are important in sustaining smoking behavior or nicotine withdrawal, respectively. We have previously shown that nicotine induces conditioned place preference (CPP) in male rats but not in females. The present study was designed to test the effects of estrogen and progesterone antagonism on CPP in female rats. Adult female Sprague-Dawley rats (n=82; 8-12 rats/group) obtained from Ege University animal breeding facility were used in the experiments; experimental procedures were ethically approved. Rats received the estrogen antagonist tamoxifen (TAM, 5 mg/kg) or the progesterone antagonist mifepristone (RU486, 75 mg/kg) IP before CPP testing. A three-chambered CPP apparatus was used and nicotine was paired with the initially non-preferred chamber. Experimental groups were saline, saline +nicotine, TAM, TAM+nicotine, RU486, RU486+nicotine. A repeated measures ANOVA with sessions as the within- and hormonal manipulations and nicotine as the between-subjects factors revealed significant main effects and interactions between all factors. One-way ANOVAs for the initial and final sessions (all groups) showed that the groups were not different from each other during the initial session but they were different regarding final session values (p<0.001). Post hoc tests revealed that nicotine induced CPP only in the TAM treated group and this group was different from the others (p<0.001 for all). In conclusion, in accordance with our previous findings, nicotine did not induce CPP in female rats when applied alone or together with RU486. However in rats, which received TAM, nicotine did induce CPP. Our results suggest that estrogen suppresses nicotine induced CPP in female rats.

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POS 4

REPEATED EXPOSURE TO CIGARETTE SMOKE DOES NOT INDUCE SENSITIZATION OF LOCOMOTOR ACTIVITY IN RATS

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Animal models of tobacco dependence rely almost exclusively on the use of par enteral (i.e., s.c., or i.p.) administration of pure nicotine. Models of dependence using inhalation of nicotine may more accurately simulate the intake of nicotine in smokers, and could also provide insights into the role of non-nicotine smoke constituents and sensory factors in tobacco dependence. The goal of this study was to validate methods for the administration extending conditioned fear responses. Inhaling to smoke to rats. This methodology was then used to examine whether repeated exposure to cigarette smoke would induce locomotor sensitization (LMS), a well-established behavioral effect of repeated parenteral exposure to pure nicotine. A 45 min exposure of rats to cigarette smoke produced peak nicotine serum and brain levels comparable to those achieved by a behaviorally active dose of pure nicotine (0.3 mg/kg, s.c.) and e 10 rats were trained to press the left and right levers while a second group of rats (n=4) was trained to press the right lever to turn on a houselight (On) or turn off a houselight (Off), in counterbalanced order. In Experiment 2, rats (n=4) were trained to press either lever and there were no experimenter-arranged consequences for pressing the levers. In both experiments subjects were given repeated, presession subcutaneous (s.c.) injections of vehicle and 0.3 mg/kg nicotine during different conditions. In Experiment 1 all subjects, regardless of training history, pressed the right lever significantly more than they pressed the left lever during the On (mean: right lever = 81.3, left lever: 4.4 resp/60 min) and Off phases (mean: right lever = 135.1, left lever: 4.8 resp/60 min), suggesting that turning on and off a houselight served as a reinforcer. A condition x lever interaction was found (On: F[4,95] = 6.6, p<0.05), indicating the existence of a context effect. In Experiment 2, there was also a significant effect of condition, with increases on both levers (mean increase: right lever = 7.7 resp/60 min, left lever = 8.8 resp/60 min; [F(4,95) = 6.6, p<0.05]) during nicotine, relative to baseline and vehicle, conditions. The results of these two experiments suggest that nicotine may serve as a reinforcer, and that nicotine selectively increases responding maintained by such reinforcers. Training history did not influence the selective reinforcing-enhancing effects of nicotine. Although nicotine increased responding in Experiment 2, the increases were smaller and could not account for the large reinforcing-enhancing effects suggested by Experiment 1.

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POS 6

NICOTINE HAS DIFFERENTIAL EFFECTS ON EXTINCTION OF FEAR CONDITIONING DEPENDING UPON NICOTINE TREATMENT ONSET: A MODEL FOR POST TRAUMATIC STRESS DISORDER

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Smoking and post traumatic stress disorder (PTSD) are positively correlated. Epidemiological studies suggest that this relationship may be bidirectional: prior and current tobacco use is associated with higher rates of PTSD and PTSD in turn is associated with initiation of smoking. Fear conditioning and extinction of fear conditioning may model aspects of PTSD. In fear conditioning, subjects form an association between a neutral conditioned stimulus and a fear-related unconditioned stimulus, resulting in fear responses. To extinguish responding to the conditioned stimulus, the species responds less in the presence of nicotine. We used a mouse model to investigate the relationship between nicotine and PTSD by testing if nicotine administration during both fear conditioning and subsequent extinction or during extinction only differentially affected extinction and reinstatement of fear responses. It was hypothesized that nicotine administration during extinction only extinguished fear, which was consistent with the idea that nicotine administration during extinction only extinguished fear, while nicotine administration during both fear conditioning and extinction only extinguished fear. Mice administered nicotine during extinction only extinguished fear, while nicotine administration during both fear conditioning and extinction only extinguished fear. Mice administered nicotine during extinction only extinguished fear, while nicotine administration during both fear conditioning and extinction only extinguished fear. Mice administered nicotine during extinction only extinguished fear, while nicotine administration during both fear conditioning and extinction only extinguished fear. Mice administered nicotine during extinction only extinguished fear, while nicotine administration during both fear conditioning and extinction only extinguished fear. 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POS4-9
SCREENING OF DIFFERENT TOXINS BY 3H-EPIBATIDINE-BINDING IN SH-SYSY AND SH-EPI HALPHA7 CELL LINES

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Nicotinic acetylcholine receptors (nACHRs) are transmitter-gated ion channels, which consist of either muscle-type (alpha1, beta1, delta, gamma, epsilon) or neuronal-type (alpha2-10, beta2-4) containing nACHRs. Short-chain alpha-neurotoxins contain 60-62 amino acid residues and four disulfide bridges, and the long-chain toxins 66-74 residues and five disulfides. Short- and long-chain alpha-neurotoxins block both Torpedo and muscle nACHRs, but only the long ones act on neuronal homooligomeric alpha7 nACHRs. Heteromeric neuronal nACHRs are not sensitive to alpha-neurotoxins. Screening of different toxins was done by receptor binding using [3H]epibatidine as the radioligand for nAChRs with SH-SY5Y and SH-EPI1-halpha7 cell homogenates. The SH-SY5Y is a human neuroblastoma cell line expressing alpha3, alpha5, alpha7, beta2, and beta4 subunits, which form different combinations. SH-EPI1-halpha7 is a human epithelial cell line, which has been transfected with alpha7 nACHR subunit gene to express human alpha7 nACHRs. Homogenates were incubated with [3H]epibatidine for 2 h. Nicotine (1 mM) was used to determine the non-specific binding. Alpha-ChxMII partially inhibited [3H]epibatidine binding both in SH-SY5Y and SH-EPI1 cells by 42.7% and by 56.4% of total epibatidine binding, respectively. Neurotoxin NTII partially inhibited [3H]epibatidine binding in SH-SY5Y cells by 9%, of total epibatidine binding. Weak toxin WTX partially inhibited [3H]epibatidine binding in SH-EPI1 cells, by 5.6% of total epibatidine binding. Cobratoxin CTX inhibited differently [3H]epibatidine binding in SH-SY5Y and SH-EPI1 cells. The maximum CTX-inhibitable binding was 13.9% of total epibatidine binding in SH-SY5Y cells, while in SH-EPI1 cells the inhibition was 38.1% of total epibatidine binding. Thus, the toxins used were able to inhibit the epibatidine binding in SH-SY5Y and SH-EPI1 cell lines confirming that they target nAChRs. The different inhibition pattern confirms the differing proportion of nAChR subunits expressed in these cell lines. Supported by a grant from Academy of Finland Research Programme on Substance Use and Addictions.

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POS4-10
ASSESSMENT OF NICOTINE METABOLISM AMONG UNDERSERVED PREGNANT WOMEN FROM NEW ENGLAND SCRIPT

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Background: Self-reports of smoking during pregnancy do not accurately reflect smoking status in part due to the social desirability bias. Furthermore, pregnant women may experience substantial fluctuation in their tobacco use as they attempt to quit or reduce smoking which further complicates the ability to classify exposure status accurately. A novel biomarker of nicotine metabolism (the 3-hydroxy cotinine: cotinine ratio [3-HC:C]) has been suggested to be a useful marker of the rate of nicotine metabolism. The purpose of this study was to examine the feasibility of using [3H]epibatidine binding to examine the influence of rate of nicotine metabolism on smoking during pregnancy.

Methods: Pregnant women who participated in New England SCRIPT (smoking cessation/reduction in pregnancy trial) had their smoking status assessed by questionnaire and biomarkers at baseline, 32 weeks gestation, and 6-months postpartum. Women who provided at least 2 urine samples (baseline and 32 weeks gestation) were included (N=176) in the present analyses. Urine samples which had already been stored frozen at -40 °C were analyzed for cotinine and 3-HC concentration by means of liquid chromatography-mass spectrometry.

Results: Of these women, 16.5% were African-American, 18.8% were Hispanic and 64.8% were Caucasian/other, The age range was 15-43 years and women smoked on average 4 cigarettes/day. The mean 3-HC:C ratio was 8.1 (+6.7) for the first trimester and 6.6 (+9.6) for the third trimester. We examined the correlation of the 3HC:ratio and number of cigarettes smoked/day. While not significant during the first trimester, the 3-HC:C ratio was significantly correlated with cigarettes smoked/day (r=0.299; p<0.001) during the third trimester. The ratio by race/ethnicity was not significantly different.

Conclusions: We found that the rate of nicotine metabolism was similar in the 1st and 3rd trimesters of pregnancy, indicating that induction of metabolism is maximal during early pregnancy Additionally, we found that the rate of nicotine metabolism was a determinant of the level of cigarette consumption among pregnant women, at least during the 3rd trimester.

National Institutes of Health, National Heart, Lung, and Blood Institute.

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POS4-11
INFLUENCE OF TOBACCO SMOKE ON ETHANOL METABOLISM IN RATS

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Tobacco smoke changes the rate of biotransformation of different xenobiotics, leading to the changes in their biological activity. The main enzyme, which metabolizes ethanol is the cytochrome P450 alcohol dehydrogenase. Ethanol is metabolised by microsomal enzymes — CYP2E1. Tobacco smoke components which may impact the activity of CYP1E2 is the nicotine, which increases the activities of the liver and brain CYP2E1 in rats, and the observed effect depends on the time of exposure. Apart from the compounds increasing the activity of drugs metabolising enzymes, tobacco smoke contains also such compounds as monoamine, cadmium, some pesticides, oxides and acrolein, which can inhibit them. The goal of the studies was to evaluate the impact of tobacco smoke on the pharmacokinetics of ethyl alcohol and its toxic ethanol metabolite such as acetate sidehydrox and on the level of other volatile organic compounds (acetone, n-butanol, methanol, n-propanol). Rats were divided on two groups, the first group was treated with alcohol (2 g/kg) and the second group was exposed to tobacco smoke (6 h per day, for 5 days), and treated with alcohol (2 g/kg). Ethanol and other compounds of interest were determined by gas chromatography after headspace solid phase microextraction. Five days exposure to tobacco smoke has an insignificant impact on the elimination of alcohol, causing only a significant increase in the volume of distribution, which could be driven by an increase in the first-pass effect. On the other hand, the inhalation of tobacco smoke induced tendency to decrease in the concentration of the acetaldehyde during the first hour after administration of alcohol. In both groups, the time profile of concentrations of acetone, methyl alcohol, n-propyl alcohol and n-butyl alcohol were not statistically significantly different. It can be concluded, that earlier exposure to relaxation is not a level of tobacco smoke (mg/m3) does not influence significantly on biotransformation of ethyl alcohol and other volatile compounds.

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SRN • Poster Session 4
Women have a harder time quitting smoking than men, and often report that this is due to the emergence of depressive and anxiety symptoms during abstention. We have previously demonstrated significantly higher beta2-nicotinic acetylcholine receptor (nAChR) availability throughout the brain in smokers compared to nonsmokers during acute abstention and that availability returns to nonsmoker levels between 6 and 12 weeks of abstention. However, there is high individual variability in the normalization of the receptor. We have hypothesized that some of this variability may be due to neurochemical differences between men and women.

In this study, tobacco smokers were imaged during acute and prolonged abstention using [123I]-I-8SPECT to examine the regulation of beta2-nAChRs availability over prolonged abstention. At the time of admission, tobacco smokers smoked 20.7 ± 7.9 cigarettes/day for 19.5 ± 7.6 years. They were helped to quit smoking with contingency management. When adjusting for age, there was no difference between men and women in beta2-nAChR availability at 1 week of abstention compared to same sex never smokers suggesting there is no significant sex difference in tobacco-smoking induced upregulation. However, there was a significant sex difference in the normalization of beta2-nAChR availability over prolonged abstention with women having a greater decline in beta2-nAChR availability than men over prolonged abstention. Interestingly, both women and men exhibited a greater decline in receptor availability in the thalamus, parietal, occipital, and temporal cortices, which was associated with greater severity of depressive symptoms during abstention; however, this effect was only observed in women. Differences in the normalization of the beta2-nAChR may explain in part why women have a harder time quitting smoking than men.

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**POS4-14 NICOTINE OCCUPANCY OF BETA2-NICOTINIC ACETYLCHOLINE RECEPTORS AFTER USE OF NICOTINE INHALER: RELATIONSHIP TO CRAVING**

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A tobacco smoke replacement product, the nicotine inhaler aims to reduce craving by mimicking the behavioral component of cigarettes and delivering controlled doses of nicotine without the harmful tars associated with tobacco smoke. Smoking patterns are different from the cigarette, and the arterial nicotine levels spike seen after use of cigarettes in absent after use of inhaler. In the current study, we aimed to measure nicotine occupancy of beta2-nicotinic acetylcholine receptors (nAChRs) after use of a nicotine inhaler, and the relationship to reduction in cigarette craving. Nine abstinent (6.9 ± 1.5ld) control smokers (age = 36.1 ± 12.9y; 4 men, 5 women) participated in [123I]-I8SPECT imaging and nicotine inhaler challenge. Subjects used the nicotine inhaler product, the nicotine inhaler, at 30 min prior to imaging. Nicotine inhaler, the amount of occupancy positively correlates with the desire to smoke a cigarette.
SMOKING IN SCHIZOPHRENIA: IMPACT OF NICOTINE ON COGNITIVE FUNCTION AND RELATIONSHIP TO SELF-REPORTED MOTIVES FOR SMOKING
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Background: Schizophrenia is associated with a higher prevalence and greater intensity of smoking. The self-medication hypothesis attributes this to beneficial effects of nicotine on illness-related deficits (e.g. cognition). Significant effects of nicotine have been observed on visual spatial working memory (VSWM), sustained attention (Continuous Performance Test- Identical Pairs; CPT-IP) and prepulse inhibition (PPI). It remains unclear whether physiological effects of nicotine translate to self-reported reasons for smoking.

Aims: This study was designed to assess self-reported smoking motivations amongst outpatients with schizophrenia and non-psychiatric controls. The relative impact of smoking abstinence and re-instatement on three indices of cognitive function (VSWM, CPT-IP, PPI) was also assessed.

Methods: Cognitive function was assessed after "typical" smoking and overnight nicotine abstinence. Self-reported smoking motivation was measured using the Modified Reasons for Smoking Scale, revised to include possible cognitive motivators.

Results: In this pilot sample (n=15 schizophrenia, n=9 control), nicotinic enhancement of VSWM performance was apparent in the schizophrenia, but not control group. Smoking status affected several CPT-IP indices. Controls demonstrated impaired hit rate when abstinent relative to smoking, primarily reflecting reduced sensitivity when abstinent. Conversely, a trend toward improved sensitivity following abstinence relative to smoking was apparent in the schizophrenia group. Preliminary findings also suggested nicotinic enhancement in PPI for controls. No significant differences in the profile of smoking motivations were detected across groups (n=49 schizophrenia, n=25 control).

Conclusion: Differing effects of nicotine on cognition have been hypothesised to play a causal role in the pattern and persistence of smoking in schizophrenia. These preliminary findings indicate that evidence for such effects is apparent even in relatively small samples’ particularly for VSWM. However, our data did not find evidence that these differential effects of nicotine on cognition are reflected by differences in self-reported smoking motivation.

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SLEEP DEPRIVATION INCREASES CIGARETTE SMOKING
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Loss of sleep may impair the ability to abstain from drug use through any of a number of mechanisms. Sleep loss may increase drug use by impairing attention and inhibitory control, increasing the value of drug rewards over other rewards, or by inducing mood states that facilitate use of a drug. In the present study, we examined whether sleep deprivation (SD) would increase smoking in cigarette smokers, and whether it would do so by impairing attention or inhibitory control. Healthy cigarette smokers (N=14) were tested in a two-session within-subject study, after overnight SD or after a normal night’s sleep. Subjects were tested in both conditions after abstaining from cigarettes for 48 hours. The procedure was designed to model the human relapse situation. On each session after sleep or no sleep, the subjects participated in a 6-hour laboratory procedure in which they completed mood and craving questionnaires as well as tasks measuring impairing behaviors, and underwent a choice procedure in which they chose between money and smoking cigarettes. The behavioral tasks included measures of behavioral inhibition and attention. SD increased the number of cigarettes subjects chose to smoke, and it also impaired behavioral inhibition, and increased both lapses in attention and simple reaction time. However, the impairments in task performance were not related to the increase in smoking, SD produced feelings of fatigue and decreased arousal. One of the craving scales, which measures the desire to smoke for stimulation, was positively correlated with cigarette choice. This suggests that SD may increase smoking because of its ability to reduce sleepiness. To the extent that desire to smoke is associated with smoking relapse, this finding suggests that subjective sleepiness may increase the risk of relapse among abstinent smokers. The findings of this study support the idea that SD may make it more difficult for smokers to abstain, although the mechanisms for this remain to be determined.

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A RANDOMISED CONTROLLED TRIAL OF SMS MESSAGES TO INCREASE RECRUITMENT TO TXT2STOP (A TRIAL OF MOBILE PHONE BASED SMOKING CESSATION SUPPORT)
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Background: Recruitment to smoking cessation trials is an important issue with many trials failing to recruit on time. Few methods to increase recruitment to trials have been evaluated by randomised controlled trial. Qualitative research suggests that being able to hear from existing trial participants about their experience may make participants more likely to join. Txt2stop is a large randomised controlled trial of mobile phone based smoking cessation support being conducted among 5800 participants ready to make a quit attempt. We sought to evaluate whether sending SMS messages containing quotes from existing participants to potential participants who were eligible but who had not yet consented increased the likelihood of them being randomised into the Txt2stop trial.

Methods: 811 participants who had been eligible to join the Txt2stop trial during the preceding 9 months were included. Participants were systematically allocated to receive text messages or not. The intervention was a series of 4 text messages sent over 4 days containing quotes from participants who had already joined the Txt2stop trial regarding why they had decided to quit smoking, e.g., Fitzroy Reid from Kilburn quit in the txt2stop trial. “I decided to quit smoking and although I feel fit and healthy at the moment I became worried about my long term health, in particular my fear of getting cancer in later life.” These weeks after sending the first text message a researcher blinded to the allocation assessed whether or not the participants had joined the Txt2stop trial.

Results: 3%/144/406 of those who were sent the messages were randomised into the txt2stop trial compared to 0.0025%/ (1/406) of those who were not sent these messages. The relative risk is 14 (95% CI 1.9-106.5).

Discussion: Sending text messages containing quotes from existing participants increased recruitment to the Txt2stop trial. SMS messages could be used to encourage smokers to make a quit attempt as well as to support a quit attempt. UK Medical Research Council funds the Txt2stop trial.

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CORRELATION OF URINARY AND SALIVARY COTININE LEVELS EARLY AND LATE IN PREGNANCY IN A POPULATION OF AFRICAN AMERICAN MOTHERS
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The literature confirms that the use of self-reports to determine tobacco exposure levels may have limited validity. An examination of the literature related to concomitant reporting of urinary and saliva cotinine in active tobacco exposure during pregnancy yields few studies. A challenge facing clinicians providing care to women who continue to smoke during pregnancy is accurate assessment of change in their smoking behavior over time. The identification of the most valid approach is needed. The purpose of this analysis is to compare the correlation between salivary cotinine levels (SCL) and urinary cotinine levels (UCL) in 71 African-American women who were actively smoking during pregnancy. Women were recruited at three prenatal care sites in the District of Columbia and were 18 years or older. Mean age of participants was 27 years. In this population SCL was highly correlated with the reported number of cigarettes smoked in the past week (r = 0.45; p < 0.001) and in the past 24 hours (r = 0.51; p <0.001). Urinary cotinine levels showed a significant correlation, albeit less than SCL, for number of cigarettes smoked in the past week (r = 0.028, p = 0.024) and in the past 24 hours (r = 0.43, p < 0.001). There were no significant differences between the trimesters for urinary cotinine levels. The three trimesters of pregnancy (median levels: 1st trimester 120ng/ml; 2nd trimester 145ng/ml; 3rd trimester 123ng/ml). The nicotine cotinine levels drop in the 3rd trimester of pregnancy without reaching statistical significance (median: 1st = 3569ng/ml; 2nd = 3989ng/ml; 3rd =2968ng/ml). With the drop in UCL, a significant increase in SCL/UCL ratios is noted in the 3rd trimester compared to the 1st (0.109 Â± 0.154 vs. 0.029 Â± 0.013; p = 0.023). We speculate the drop in urinary cotinine levels to be attributable to the increased volume distribution within the feto-maternal circulation. Our conclusion is that salivary cotinine levels may be a valid and reliable measure to compare tobacco exposure or the duration of pregnancy as compared to urinary cotinine levels. Eunice Kennedy Shriver National Institute of Child Health and Human Development.

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In current research on the deposition of mainstream smoke (MS) particulate in smokers is insufficient especially if cigarette configurations, e.g., non-menthol vs. menthol, influence exposure or disease risk. A 9-subject crossover study approved by Battelle and CDC Institutional Review Boards was conducted in which smokers were randomly assigned commercial menthol or non-menthol cigarettes. Characteristic chemical concentrations were normalized to the mass of fine or ultrafine particulate. MS and exhaled breath nicotine were not different for the menthol and non-menthol cigarettes. Average exhaled breath cotinine was 198% higher in subjects smoking the non-menthol cigarettes than the menthol cigarettes (intra-subject variation, 12-28%; inter-subject variation, 11-24%). Descriptive statistics were similar in subjects smoking regular and low-tar cigarettes (intra-subject variation, 16-26%; inter-subject variation, 21-32%). Pyrene in MS, exhaled breath, or deposition levels, and urine 1-hydroxypyrene levels were not different between the two test cigarettes. Urine NNAL and chemical speciation of ultrafine particles will be presented.

The work was performed under contract with the U.S. Centers for Disease Control and Prevention.

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**POS 24**

CHARACTERISTICS OF SMOKERS ENDORSING INCREASED APPETITE/WEIGHT GAIN AS AN EFFECT OF SMOKING ABstinence

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Increased appetite/weight gain (IAW) is endorsed as a smoking withdrawal symptom by around 40% of smokers. To characterize these smokers in greater detail, we studied 411 daily smokers (68.9% female, 80.9% White; 40.9% IAW+) recruited from the local community. Mean [SD] age was 30.1 [9.1] years, number of years smoking was 18.7 [7.7], and average pack years was 4.7 [2.4]. The sample included 56.5% normal weight (BMI 18-24.9, overweight (BMI 25-29.9), and 16.3% obese (BMI 30 or greater). IAW was significantly over-represented in women (men: 32.8%; women, 44.5%; ChiSq=0.01, p<.05). No other differences in participant characteristics based on sex or IAW emerged. IAW+ and women scored significantly higher on the Dieting and Bingeing Severity Scale. On the Three-Factor Eating Questionnaire, IAW+ scored higher than IAW- on disinhibited eating and hunger, and women scored higher than men on disinhibited eating and cognitive restraint. A larger percentage of IAW+ (68.7%) reported having a “sweet tooth” than IAW- (58.1%), but the difference fell short of significance. IAW+ and women scored significantly higher on the Weight Control Smoking Scale than did their IAW- and male counterparts. Significant differences in self-efficacy among maintaining abstinence if weight gain occurred were observed based on both IAW (IAW+>IAW-) and sex (men>women), with a significant interaction effect such that IAW+ women had higher self-efficacy than IAW- women with significantly larger proportion of IAW+ (90.5%) reported craving for a cigarette as an abstinence effect than IAW- (73.7%; ChiSq=17.93, p<0.01). In summary, smokers with IAW are more likely to be female and to post elevated scores on multiple measures of disordered eating. Even though they are more likely to be overweight or obese, they score higher on the use of smoking to manage weight and have less self-efficacy about maintaining abstinence if they gain weight. Future research on biobehavioral mechanisms underlying IAW may be helpful in validating retrospective self-report and identifying smokers at risk of failed cessation because of excessive weight gain.

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** POS 22 **

DEPOSITION AND CHEMICAL CHARACTERIZATION OF FINE AND ULTRA FINE PARTICLES AND URINARY BIOMARKERS BY SMOKERS OF MENTHOL AND NON-MENTHOL CIGARETTES

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Current research on the deposition of mainstream smoke (MS) particulate in smokers is insufficient especially if cigarette configurations, e.g., non-menthol vs. menthol, influence exposure or disease risk. A 9-subject crossover study approved by Battelle and CDC Institutional Review Boards was conducted in which smokers were randomly assigned commercial menthol or non-menthol cigarettes. Characteristic chemical concentrations were normalized to the mass of fine or ultrafine particulate. MS and exhaled breath nicotine were not different for the menthol and non-menthol cigarettes. Average exhaled breath cotinine was 198% higher in subjects smoking the non-menthol cigarettes than the menthol cigarettes (intra-subject variation, 12-28%; inter-subject variation, 11-24%). Descriptive statistics were similar in subjects smoking regular and low-tar cigarettes (intra-subject variation, 16-26%; inter-subject variation, 21-32%). Pyrene in MS, exhaled breath, or deposition levels, and urine 1-hydroxypyrene levels were not different between the two test cigarettes. Urine NNAL and chemical speciation of ultrafine particles will be presented.

The work was performed under contract with the U.S. Centers for Disease Control and Prevention.

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** POS 23 **

PREDICTORS OF INCREASED SMOKE PER DAY IN LIGHT SMOKERS

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Recently heightened attention to light smoking issues has occurred in both research and treatment communities, particularly as data continue to indicate college students and a number of ethnographic cultures tend to smoke less frequently than other populations. Because even lighter smokers and younger smokers do not always exhibit autonomy from cigarettes despite lesser levels of craving and dependence, understanding environmental triggers to escalated smoking in a given day within light smokers may enable better intervention for this population. Some of these triggers include: day of the week, time of day, affect and mood, environmental cues such as alcohol, other people and other smokers, and location in general. To examine the influences of amount smoked per day by light smokers, 119 light smoking college students completed paper tobacco consumption diaries (TCDs) for 1 week, which included assessments of each trigger for each cigarette smoked per day. Cluster adjusted, zero-truncated negative binomial regression revealed that the most salient influences to increased smoking on a given day in light smokers are alcohol, Incidence Rate Ratio (IRR) = 1.43, p < .01, the house or apartment (IRR = 1.30, p < .01); a bar or club (IRR = 1.19, p < .05); a restaurant (IRR = 1.23, p < .05); or a party (IRR = 1.26, p < .05). Time of day was also influential with the strongest influence on increased light smoking in the model being that of the later hours of the day such as the 10pm to 5am interval (IRR = 1.81, p < .05), and the 5pm to 10pm interval (IRR = 1.82, p < .05). Post-hoc comparisons of IRRs indicate that all of the significant variables in the model contribute roughly equally to increased rates of smoking on a given day. Hence, light smokers appear to exhibit susceptibilities to environmental cues to smoking compared to those of heavier smokers. As a result, it may be that future interventions targeting light smokers may benefit from adapting existing programs for heavier smokers by focusing on environmental influences of smoking such as the time of day, location, and the presence of alcohol.

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POS4-24
CUE-ELICITED CRAVING AND ITS RELATIONSHIP TO SMOKING
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Cigarette craving, one hallmark sign of nicotine dependence, is often measured in laboratory settings using cue reactivity methods. How lab measures of cue reactivity relate to real world smoking behavior is not yet clear, particularly among non-tobacco using substance users. We examined the relationship of cue reactivity (coping in response to active smoking/avoidance) stimuli, with and without control of craving in response to neutral stimuli, as being predictive of smoking behavior (cigarettes per day (CPD) on the day of cue reactivity testing and average CPD for the week following testing (N=76)). Results indicated that cue-evoked craving in response to stressful imagery, and to a lesser extent, in vivo smoking cues, significantly predicted smoking behavior during the week following testing. For example, for every one unit increase in overall craving in response to the stressful imagery cue, participants smoked 1.7 more CPD on average (p = .02), and for every one unit increase in craving in response to in vivo smoking cues, average CPD increased by 1.2 (p = .05). Physiological cue reactivity (i.e., increases in heart rate in response to stressful imagery cues) was also predictive of increases in smoking behavior (p = .03). However, these predictive relationships were not significant upon controlling for neutral cues. Nicotine dependence may moderate the relationship between laboratory measures of cue reactivity and actual smoking; the association between cue reactivity (in response to stressful imagery) and smoking behavior was strongest among participants low in nicotine dependence. It may be that higher levels of nicotine dependence are associated with higher levels of ambivalence about smoking, thus diminishing cue-specific craving. Our findings highlight important methodological considerations for cue reactivity research. Primary among these are measurement issues of cue reactivity itself, which is best defined 1) in isolation to a specific cue alone, or 2) relative to a control/neutral cue. Either definition results in a host of theoretical and practical implications that should be borne in mind for future research.

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POS4-25
SMOKING TOPOGRAPHY AMONG POLISH SMOKERS OF CIGARETTES WITH LOWERED NICOTINE YIELDS
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Objectives: Smoking topography is a set of parameters describing how cigarettes are smoked by particular smoker. It includes such parameters like puff volume and its flow, puffs frequency and intervals between following puffs. All these parameters influence doses of tobacco smoke ingredients inhaled by smoker, especially nicotine.

Methods: 95 regular smokers of cigarettes with lowered yields of nicotine (0.6 mg/cigarette or less) were examined. Smoking topography was measured during a day using portable CRESS Pocket monitors (Plowshare, USA). Control group of 34 smokers who smoked cigarettes with high nicotine yield (0.8 mg/cigarette or more) was also investigated.

Results: Average number of puffs taken by examined smokers was 14.0±3.8 and was significantly higher than number recorded in a control group (11.8±4.5, p<0.05).

Average smoking topography parameters recorded in examined group were as follows: puff volume 59±16 mL, puff flow 39±10 mL/sec, puff peak flow 56±15 mL/sec, puff duration 1.8±2.0 sec, intervals between puffs 20±4 sec, and time to peak flow 0.5±0.2 sec. None of those parameters differ significantly from average values recorded in a control group (p=0.05).

Conclusions: Results showed that smoking topography among Polish smokers of cigarettes with lowered nicotine yields does not differ significantly from smoking topography among smokers of high nicotine yields cigarettes. However smokers of “light” cigarettes take more puffs during smoking one cigarette than smokers of “heavy” cigarette do.

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POS4-26
DO POSITIVE EXPECTANCIES FOR TOBACCO AND ALCOHOL HAVE A CRITICAL DEVELOPMENT PERIOD IN PRE-ADOLESCENTS?
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Studies on expectations and the prediction of smoking and alcohol use often suggest that expectancies develop in children before direct pharmacological exposure to these substances. Positive expectancies have been shown to predict smoking initiation in children and to mediate and moderate the relationship between dispositional variables and smoking or drinking behavior (Brandon et al., 1996; Cooper et al., 1992). Negative outcome expectancies for alcohol and tobacco types of cigarettes, were shown to decrease as children move from early adolescence, but positive expectancies tend to increase during this time (Chassin et al., 2001; Goldberg et al., 2002). Positive alcohol expectancies have been found to increase in children in 3rd and 4th grades, indicating what some investigators have termed a critical period for the development of positive expectancies (Miller et al., 1990). In the present study, we followed 277 2nd-6th grade students over a 2-year period and assessed tobacco and alcohol expectancies at baseline, 6 months, 12 months, and 18 months. Children completed the Smoking Expectancies Questionnaire for Children (SEQ) and the Alcohol Expectancy Questionnaire-Adolescent (AEQ-A). We selected the Positive Consequences scale of the SEQ-C and the Tension Reduction scale of the AEQ-A for analysis, as they are representative of positive outcomes and are sufficiently distinct. We conducted repeated measures analyses of variance with grade as the between-subjects factor and time as the within-subjects factor were conducted for the respective positive expectancy scales for both tobacco and alcohol. There was a significant main effect for grade on positive alcohol expectancy change [F(4, 260) = 4.49, p = .002, partial eta squared = .08], whereby 3rd graders’ expectancies significantly differed from all grades except 2nd (all p’s < .05). The results for positive smoking expectancy change also indicated a significant main effect for grade [F(4, 260) = 2.39, p=.05, partial eta squared = .042], whereby 2nd graders’ expectancies significantly differed from 3rd, 4th, and 6th graders. Practical and theoretical implications regarding ecologic and prevention efforts are considered.

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POS4-27
PUFF TOPOGRAPHY DURING MENTHOL AND NONMENTHOL CIGARETTE SMOKING
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Menthol cigarettes are often subjectively rated as less harsh and smoother than non-menthol cigarettes. However, there are concerns that menthol increases the inherent harmfulness of a cigarette. As part of a large, ongoing study approved by Battelle and CDC Institutional Review Boards to determine exposure from various types of cigarettes, we examined puff topography and objective exposure variables of cigarettes in high tar (> 12 mg) menthol (n = 12) and nonmenthol (n = 12) cigarette smokers. All were men, similar in age (47.5 ± 11.1), and similar in the average number of cigarettes smoked per day (16.0 ± 7.3 per day) and had been smoking the currrent cigarette for at least 3 months. Participants smoked their usual cigarette brand ad libitum between and during two clinic visits (AM and PM). Cigarette butts, from cigarettes smoked outside the lab, were collected between clinic visits, with a 100% compliance rate. Only one cigarette was smoked per visit. Participants smoked one cigarette through a CRESS topography system to assess number of puffs, puff volume, puff velocity and puff duration, while inhalation parameters were measured with an ambulatory respiratory inductive plethysmography device (Lifeshirt®). Exhaled carbon monoxide (CO) and resting heart rate were collected before and after smoking. Exhaled CO increased for both groups but was slightly higher after menthol smoking (10.3 ppm, 8.4 ppm, respectively). Heart rate increased after menthol (53 bpm) and was less impacted by nonmenthol smoking (5 bpm). Menthol smokers took more puffs per cigarette but had lower average puff volume and total puff volume figures (16.3, 43.5 mL, 670.1 mL, respectively) than nonmenthol smokers (13.8, 54.5 mL, 697.1 mL, respectively). These preliminary data suggest that there may be significant differences in smoking behaviors of cigarettes in high tar menthol and nonmenthol cigarettes. A larger sample size for a between-subject design such as this one will clarify whether the relationship differences are significant. Other participant groups of light and ultra light smokers may be compared to determine the influence of cigarette design and flavor on smoking behavior.

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PREVALENT OF TOBACCO USE IN PATIENTS ATTENDING THE PSYCHIATRY OPD: EVALUATION BY URINARY BIOMARKER

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Background: The coexistence of substance use with mental health problems is a rule rather than an exception. Patients with co-morbid disorders irrespective of temporally and causally distinct relationships pose a great challenge on health care services. Subjects with co-morbid disorders had higher service utilization rates, a more severe symptom profile, greater functional disability and a longer illness course than those with psychiatric illness alone. Aim: The present study determines the prevalence of tobacco dependence among patients suffering from psychiatric illness. The correlation between the self-reported tobacco use and the urin cotinine levels in these patients was also studied. Methodology: Male consecutive patients attending the psychiatry OPD, AIIMS, New Delhi, India, were recruited in the study after informed consent. The subjects were also screened for the presence of the psychiatric illness as per the DSM IV TR criteria. Their tobacco use history was recorded in detail and the nicotine dependence severity was assessed using the FTND (for smoking and the smokeless tobacco). Additionally, sociodemographic data was also collected and urine sample was analysed for cotinine, by ELISA technique. Results: A total of 158 male subjects were recruited in the study. The prevalence of tobacco use was high in these patients. The majority of the patients were smokers with a mean age of 25.6 (range 19.5-60) years and 60% were aged 20-39 years. The prevalence of smoking was higher among patients with disturbed emotions (0.05%, CI 95% 0.00-0.10) when compared to the normal population (0.02%, CI 95% 0.00-0.05). Gender difference was observed to be insignificant (F[1,299] = 1.10, p < .25). Conclusions: The prevalence of smoking among psychiatric patients is high. Males were affected significantly compared to females. There was no significant gender difference in prevalence of smoking.

CIGARETTE ABSTINENCE IMPAIRS MEMORY AND METACOGNITION DESPITE ADMINISTRATION OF 2 MG NICOTINE GUM

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Nicotine replacement therapies, including nicotine gum, can facilitate temporary abstinence in smokers, and thus support compliance with the increasing scope of smoking bans that have been enacted. Tobacco use is regulated by the Food and Drug Administration and adopted in some businesses that require prolonged intervals of smoke-free activity, including airlines and hospitals. The present study was designed to assess the effects of nicotine gum on attention, memory, and metacognition under conditions of cigarette abstinence and non-abstinence. We used a double-blind, within-subjects design to test the effects of cigarette abstinence (i.e., 8-hour abstinent vs. non-abstinent states) and nicotine gum (i.e., 0.25 mg vs. 2 mg of nicotine) on sustained attention, free recall, and metacognition. Moderate smokers received one session of training followed by test sessions on each of four days in four conditions (1) nicotine gum, (b) non-abstinent with nicotine gum, (c) abstinence with control gum, and (d) non-abstinent with control gum. The main dependent measures were sustained attention performance, predicted recall, actual recall, and metacognitive accuracy (i.e., the relationship between predicted and actual recall, assessed with Bias scores and Gamma correlations). Main effects of abstinence (F[1,29] = 9.66, p < .01) and gum condition (F[1,29] = 6.00, p < .05) were observed for sustained attention performance. Abstinence reduced the magnitude of predicted recall (F[1,30] = 5.59, p < .05) and actual recall (F[1,31] = 14.63, p < .01); however, no benefit due to nicotine gum was observed for these measures. Finally, absolute metacognitive accuracy (Bias) was impaired by abstinence (F[1,30] = 9.57, p < .01), but relative metacognitive accuracy (Gamma) was unaffected. In sum, participants performed worse during states of cigarette abstinence, and they remained overconfident in their memory performance during states of nicotine withdrawal in the absence of nicotine gum. The implications of these cognitive effects will be considered, especially for individuals such as pilots and doctors who may work long hours in states of nicotine withdrawal.

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NICOTINE DEPENDENCE AND GENDER DIFFERENCES IN COTININE LEVELS AMONG CURRENT SMOKERS IN FINNISH POPULATION

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We used Finnish population data to examine the association of smokers’ cotinine levels with multiple measures of nicotine dependence. In particular, gender differences concerning correlation of cotinine levels with nicotine dependence measurements were of interest. Participants were sampled from a national health examination survey HUSK2007, which included a comprehensive health examination, including a separate questionnaire for ever smokers. Eligible ever-smokers reported current daily or occasional smoking or having smoked over 100 cigarettes in lifetime in the baseline questionnaire. Population-based smoking data consisted of 1750 ever-smokers. Cotinine levels were used from 659 current smokers. A specific smoking related questionnaire included measures of nicotine dependence. Fagerstrom Test for Nicotine Dependence (FTND), Heaviness of Smoking Index (HSI), Nicotine Dependence Syndrome Scale (NDSS), Hooked On Nicotine Checklist (HONC). Mean of the FTND (range 0-10) was 3.25 (SD 2.5) for women and 3.58 (SD 2.5) for men, those of the NDSS (range 0-56) were 18.3 (SD 13.4) for women and 19.6 (SD 14.9) for men, whereas mean of the HONC was (range 0-10) did not differ by gender (6.1(SD 2.7). Correlation between cigarettes per day (CPD) and cotinine was 0.53 (CI 95% 0.47-0.59). It showed a linear increase up to 25 CPD and then leveled off (the correlation coefficient (CC) 0.50-0.66) was higher than among men (0.48, CI95% 0.38-0.56). For FTND and cotinine it was 0.50 (CI 95% 0.44-0.56); higher among women (0.52, CI 95% 0.43-0.60) than men (0.48, CI 95% 0.39-0.58). Relationship between cotinine levels (adjusted for CPD) and FTND remained significant even when the CPD item was removed. Correlations between NDSS and cotinine were 0.38 (CI 95% 0.31-0.44), among women (0.40, CI 95% 0.30-0.50) higher than among men (0.35, CI 95% 0.25-0.45). Between HONC and cotinine correlation was 0.40 (CI 95% 0.29-0.51) varying only a little between women (0.23, CI 95% 0.12-0.34) and men (0.21, CI 95% 0.11-0.31). We conclude that the association of cotinine levels with FTND and NDSS differ by gender, while for HONC it does not differ between men and women.

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GENDER DIFFERENCES IN LABORATORY CUE-REACTIVITY


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Background: Nicotine-related factors, and specifically, reaction to smoking cues, have been hypothesized to play a greater role in driving smoking behavior in women. Aims: To examine differences in reaction to smoking-related stimuli. Methods: Participants (n=91, 41% women) who smoked an average of 15 (SD=8.73) cigarettes per day were exposed to 6 cue sets (neutral, smoking, alcohol, negative affect, positive affect, and smoking-forbidden), presented in counterbalanced order across 6 sessions. In each session, after a 30-minute deprivation period, participants experienced 3 minutes of cue exposure (30 images shown for 6 seconds each). Participants rated their craving (GSSU-Brief, scaled as 0-49) before exposure and afterwards. We analyzed gender differences in changes in craving, controlling for stimulus type and craving change in response to neutral cues. Results: There was a main effect of cue on craving change; all cues except positive affect increased craving; Smoking (3.07, 95% CI: 1.79 – 4.34), Alcohol (2.33, 1.04 – 3.63), Negative affect (2.47, 1.19 – 3.76), Positive affect (0.059, -1.16 – 1.27), and smoking-forbidden (1.98, 0.72 – 3.24). Overall, women showed a greater average increase in craving than men (1.56, 0.41 – 2.75). The gender difference did not vary across cues: there was no cue x gender interaction. There was an interesting interaction between gender and cigarettes per day: Among women, craving change increased 1.1 points for every additional 5 CPD smoked (p=0.0005), such that women’s reactivity was higher only among heavier smokers; for men, this was only 0.09 (ns). Conclusion: Women experience greater increases in craving relative to men when exposed to smoking-related stimuli, but only among heavier smokers. Although the differences are small, heavy-smoking women may benefit from the use of nicotine replacement when attempting to quit smoking.

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POS4-32  PUFF TOPOGRAPHY AFTER DENICOTINIZED CIGARETTES OR OVERNIGHT TOBACCO ABSTINENCE

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In previous studies we have found that the inhalation of smoke that follows a cigarette puff differs from normal tidal respiration by being larger, faster and longer. In the present study, we have attempted to parametrically alter smoking behavior to determine the consequent effects of puffing, inhalation and independent indices of smoke exposure – plasma nicotine boost and CO boost. In the referent condition, participants (N=12; 10 men; average age 34.8 yr) smoked their usual brand of cigarette without restrictions on time since last cigarette–non tobacco deprived. Two other experimental sessions (separated by 24 h or more) were counterbalanced. They employed CO-verified overnight tobacco deprivation and smoking a non nicotine cigarette (no deprivation; Quest-3). CO boost in the referent condition averaged 5.9 ppm, after overnight abstinence it was 5.2 ppm, while the boost after the Quest cigarette was 4.2 ppm. Nicotine boost in the referent condition averaged 11.0 ng/ml, while abstinence it averaged 12.4 ng/ml and after the Quest cigarette there was a negative “boost” of -0.5 ng/ml. There were very small concomitant changes in puff topography induced by deprivation or the non nicotine cigarette conditions. For example, puff volume averaged 112, 106 and 105 ml in the referent, deprived and Quest conditions, respectively, while total puff volume averaged 2053, 2119 and 1694 ml in those three conditions. Similarly puff duration (1.8 to 2.0 sec) and puff velocity (79 to 82 m/min) varied slightly between conditions. Inhalation indices will be correlated with homologous puff parameters in subsequent analyses. The unexpected finding that puff parameters and CO boosts were stable across a wide range of experimental manipulations, while nicotine boosts changed, suggest that inhalation parameters may prove to be an important index of smoke exposure.

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POS4-33  SELF-EFFICACY PREDICTS ENROLLMENT IN SMOKING CESSATION PROGRAM FOR HEAD AND NECK CANCER PATIENTS

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While smoking cessation is crucial to quality of life, recurrence rates, and survival, 35% to 46% of head and neck patients continue to smoke after diagnosis. To better understand how to deliver cessation services to this population, this study examined the predictors of participation in a smoking cessation intervention for head and neck cancer patients. This is a sub-study of a larger randomized control trial, which recruited head and neck cancer patients from three separate VA hospitals (N=131) and the University of Michigan Hospital (N=155). Eligible subjects were randomized to usual care or nurse-administered intervention consisting of cognitive behavioral therapy and medications. All head and neck cancer patients who had smoked in the past six months were eligible for participation in the study. This sub-study used existing data to determine the predictors of smokers’ participation in the randomized control trial. Forty-eight percent of those eligible participated, of which 61% were currently smoking, 19% quit last month, and 20% quit in the last 6 months. About one-third had a drinking problem, (30%, n=83) and over half showed signs of depressive symptoms (57%, n=160). Multivariate analysis showed that low self-efficacy was the only statistically significant predictor of participation in the study (p<.05). Problem drinking, lower depressive symptoms, and laryngeal cancer site, were marginally significant in predicting nonparticipation in this study (p<.10). Special outreach may be needed to reach head and neck cancer patients who are overly confident in quitting, problem drinkers, and laryngeal cancer patients, all of which are less likely to participate in smoking cessation interventions.

This study was conducted while the first author was at the Ann Arbor VA Center for Clinical Management Research Health Services Research & Development. This study was supported by the Department of Veterans Affairs IRR&D, Global Health through the Managed Care Forum, and the National Institutes of Health through the University of Michigan Head and Neck SPOR grant P50 CA97248.

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POS4-34  NONDEPRIVED SMOKERS REPORT MORE PROSPECTIVE MEMORY ERRORS THAN NONSMOKERS

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Purpose: This study aimed to 1) replicate findings suggesting smokers report more prospective memory (PM) errors than nonsmokers, 2) determine whether these findings extend beyond self-report to computerized PM tasks, and 3) examine whether 24-hour nicotine deprivation would worsen performance in smokers. Design: Smokers were randomly assigned to nicotine-deprived (24 hours) or nondeprived (smoke as usual) conditions.

Participants: Smokers (n=75) and nonsmokers (n=75) were recruited from the community and college student populations.

Measures: Participants completed the Prospective Memory Questionnaire and 3 computer tasks. These computer tasks included 1) a lexical decision task (LDT) to establish baseline accuracy and reaction time to letter string judgments, 2) a LDT with an event-based PM intention, and 3) a LDT with a time-based PM intention.

Results: Controlling for sample type (college or community), age, alcohol abuse, and drug abuse, significant effects of smoking status were present for self-reported long-term and short-term PM errors. Nondereved smokers reported more long-term PM errors than nondeprived smokers, and more short-term PM errors than nonsmokers. No group differences were present on the computerized PM tasks. The only indication of worsened performance on the computerized tasks for deprived smokers was the presence of significantly more judgment errors on the baseline LDT and the LDT with the time-based intention than both nondeprived smokers and nonsmokers.

Conclusions: The findings provide further support for differences between smokers and nonsmokers on self-reported PM errors; however, these differences in PM did not extend to the computerized tasks. Nicotine deprivation appeared to worsen judgment accuracy, but did not affect PM performance. PM represents an important component of planned behavior. The results indicate PM in smokers relative to nonsmokers may carry important clinical implications for implementing cessation plans and prevention of relapse.

This study was conducted while the first author was at Louisiana State University and the University of Mississippi Medical Center/G.V. Sonny Montgomery VAMC. Supported by funds awarded to the first author by the Louisiana State University Chapter of the Sigma Xi Research Society.

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POS4-35  STRESS INDUCED AFFECTIVE, SMOKING AND FOOD CRAVING RESPONSES OF OBSESE AND NONOBSE SMOKE R S

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Smoking and obesity are two of the leading risk factors to chronic disease development (World Health Organization, 2008). In addition to morbidity risk, obese smokers may experience a greater risk of depression compared to non smokers (Freeman et al., 2006). The health risks of smoking and obesity are undoubtedly clear, however, whether psychological factors (i.e., vulnerability to stress, contribute to the co-occurrence of smoking and obesity, remains uncertain. While craving and emotional responses to stress have been independently researched among smokers and obese individuals, less is known on stress-induced responses of obese smokers. The purpose of the present study was to examine stress induced affective (dysphoria), smoking and food craving responses among a sample of smokers (n=23) with varied Body Mass Index (BMI); BMI > 30 = obese (O+), BMI <30 = non-obese (O-) randomized to either a psychological stressor or control condition. Responses were measured at baseline, immediately post exposure, and 15 and 25 minutes post exposure. Results from a 3-way ANOVA showed a significant interaction between stressor, time, and obesity status as it related to urge to smoke as a perceived means to relieve negative affect [F (2, 40)= 5.987, p = .005] but not as a reward [F (2, 40) = .737, p = .485]. A significant interaction was also found for food craving [F(2,40) = 5.400, p = .008] and dysphoria [F(2,40) = 7.528, p < .002]. Pair wise comparisons for smoking (LSD = .072), food craving (LSD = 4.956) and dysphoria (LSD = 9.111) suggest that immediately post stressor, O+ smokers experienced a greater increase in smoking to relieve negative affect and dysphoria, compared to O+ smokers in the control condition. Post hoc smokers, an obsessive-compulsive personality disorder, but not in urge to smoke was observed. Pair wise comparisons for food craving did not reveal significant differences between O+ and O- smokers in neither stressor nor control condition. Our findings indicate that under stressful conditions, O+ smokers are highly susceptible to crave cigarettes, but not food, during disproportionately elevated dysphoric states. Implications are discussed.

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**POS4-36**

**SMOKING TOPOGRAPHY PREDICTS ABSTINENCE FOLLOWING TREATMENT WITH TRANSDERMAL NICOTINE PATCH**

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The present study investigated whether measures of smoking topography, such as number of puffs, puff volume and intensity, predicted abstinence among smokers receiving transdermal nicotine patch during an 8-week open label trial. As part of a baseline pretreatment laboratory visit, a subset of participants (N=116) completed smoking history and demographic questionnaires and were informed about the study and its goals. Participants then completed weekly center-based counseling sessions. Abstinence was defined as 7 days without smoking. Participants were followed for 3 months following the end of treatment.

**POS4-38**

**THE FUNDAMENTAL STRUCTURE OF CIGARETTE CRAVING IN YOUNG ADULT SMOKERS: A MULTIDIMENSIONAL ANALYSIS**

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Cigarette craving is a complex phenomenon, with emotional, cognitive, and behavioral factors that are inadequately captured by craving measurements focusing only on intensity. Craving among cigarette smokers, particularly young adults, remains poorly understood, although craving is easily captured in the laboratory through exposure to smoking-related stimuli, such as photographs of smokers or paraphernalia. More recently, virtual reality (VR), in which smokers immerse themselves in a smoking-related environment, such as a party with smokers, has been used. Craving under these conditions is then compared to craving elicited by neutral stimuli such as a VR nature setting. We compared craving in the photo cue and VR experimental conditions, in response to both neutral and cigarette-related stimuli. Because of the immersive sensory nature of VR, participants might experience craving that is more realistic than most laboratory craving. Young adult participants (Photos, N = 13, mean age = 23.2; VR, N = 20, mean age = 19.2) were asked to indicate whether they would prefer to change the smoking-related environment, such as a party with smokers, to something else (e.g., a nature setting). Results indicated that VR craving was significantly higher than Photo craving, suggesting that VR craving is more realistic than Photo craving.

**POS4-37**

**INFLUENCE OF PTSDF SYMPTOM CLUSTERS ON SMOKING STATUS AMONG HELP-SEEKING IRAQ AND AFGHANISTAN VETERANS**

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Despite the strong association between smoking and PTSD, mechanisms influencing smoking in this population remain unclear. Previous research has examined the relationship between smoking and PTSD symptom clusters, but results have been inconsistent. We examined the relationship between smoking and PTSD symptom clusters among help-seeking Iraq and Afghanistan veterans (N=435). Participants were recruited from a PTSD specialty clinic at a VA medical center in Seattle, WA, and completed a self-report assessment of smoking status and PTSD symptom severity on average 13 years after deployment. We used a multivariate linear regression model to examine the independent association of smoking with PTSD symptom clusters, controlling for age, gender, and active duty years.

**POS4-39**

**DISTRESS TOLERANCE AS A PREDICTOR OF EARLY SMOKING LAPSE**

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We examined laboratory-based measures of distress tolerance (DT) as predictors of early smoking lapse in a randomized clinical trial evaluating a 12-week DT treatment for nicotine dependence in early smoking lapsers (Brown et al., 2007). The DT treatment + transdermal nicotine patch (TNP) and 22 received ST + TNP treatment. On average participants were 47.68 (SD = 10.31) years old, 51% female and had a moderate level of nicotine dependence (mean FTND = 6.3, SD = 1.73). Pre-treatment assessments of physiological reactivity and self-reported distress responses to a stressful math task (PASAT) and a stressful Mirror Tracing (CMT) task were recorded along with a measure of behavioral persistence on these DT tasks. After controlling for treatment condition and levels of nicotine dependence (FTND), smokers with lower persistence during DT tasks had significantly greater levels of withdrawal relative negative affect (d = 0.70; p < 0.05) in the sessions prior to quitting and significantly greater increases in negative affect on quit day (B = 0.57, SE = 0.24, p < 0.05). In survival analyses that controlled for level of nicotine dependence, treatment顺利完成 and a list of factors in determining early lapse.
POS4-40  THE EFFECTS OF TOBACCO EXPOSURE AND DEPENDENCE ON BONE MINERAL DENSITY IN FEMALE SMOKERS

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Background: Studies examining smoking status (current, former, never) have identified current use as a risk factor for osteoporosis (low bone mineral density, BMD). Little is known of the level of current use (tobacco exposure) and BMD. Objective: To examine relationships between tobacco exposure and dependence and BMD. Methods: 288 relatively healthy female smokers underwent full body dual x-ray absorptiometry scans (DXA). They were between 18 to 55 years old (39.7 ± 10.1). Tobacco exposure and dependence measures included the Fagerstrom Test for Nicotine Dependence (FTND), cigarettes per day (CPD), cotinine, carbon monoxide (CO), and pack-years. Age, race (white/black), menopausal status, exercise capacity, diet, alcohol intake, body mass index (BMI), and depression were evaluated as confounders. Results: Less than 10% of the women met the criteria for osteopenia and none for osteoporosis. Significant correlations were identified between BMD and age, race exercise, menopausal status, and BMI. These variables were included as covariates. A series of ANCOVAs, the subtotals of whole body (excluding head) DXA scan results (g/cm²) as an outcome measure, were conducted. Main effects for DOSE were observed for CO (p<0.03), cotinine (p<0.02), pack-years (p<0.06), and FTND (p<14). CPD values did not appear to be associated with BMD. Conclusion: Although, the current smokers were relatively young without significant bone pathology, the results provide evidence that higher levels of tobacco exposure and dependence lead to lower BMD in a relative dose-response fashion. It remains to be investigated which of these tobacco use measures best predict subsequent bone loss and fracture risk. Supported by NIDR 12503.

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POS4-41  THE IMPACT OF CORTISOL CONCENTRATIONS, CRAVING AND MENSURAL CYCLE PHASE DURING AD LIBITUM SMOKING ON TIME TO RELAPSE

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Recent research indicates stress, craving and menstrual phase may play a role in relapse to smoking. It remains unknown how these factors may interact to influence smoking quit attempts. We aim to describe the relationship between craving and cortisol concentrations by menstrual phase on the day before quit and investigate the impact of this relationship on time to relapse. Female smokers (n=38) between the ages of 18-40 were randomized to complete data collection during either the follicular (n=21; F group) or luteal (n=17; L group) menstrual phase. Salivary cortisol samples and craving levels were assessed during ad libitum smoking the day before each participant’s assigned quit date at five different times during the day: waking, one hour later, 10:00 am, 8:00pm, and before bed. Craving at wake up was significantly greater in the F group than the L group (2.5±1.9 vs. 1.1±1.4; p-value =0.02; respectively). There were no other significant differences in craving or cortisol levels by menstrual phase. Decreased levels of morning cortisol concentrations and a greater decline from morning to the nadir levels in cortisol were associated with increased craving at bedtime (r=0.44, p-value=0.005; r=0.48, p-value=0.002; respectively). This finding was significant only in the L group (r=0.68, p-value=0.002; r=0.67, p-value=0.003; respectively) and not in the F group (rs < 0.15, ps > .21). After controlling for FTND score, craving at wake-up was a significant predictor of time to relapse (p=0.008). Our results indicate that menstrual phase may play a role in the relationship between craving and cortisol concentrations, and craving may play a part in relapse to smoking. A larger study is currently underway to confirm the results of this pilot study.

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POS4-42  EFFECTS OF ACUTE NICOTINE ON WORKING MEMORY: IMPLICATIONS FOR CIGARETTE SMOKING

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People with ADHD display a variety of core cognitive deficits including difficulty on tasks of working memory. Human and animal studies have shown that acute nicotine administration improves working memory and demonstrated that nicotinic antagonists impair working memory. Persons with ADHD smoke cigarettes at twice the rate of the general population and have more difficulty quitting smoking. It may be that effects of nicotine on working memory contribute to smoking behavior in this population. The aim of this study was to examine the effects of acute nicotine on the n-back task, a measure of working memory. The protocol was an acute, single, oral dose of nicotine (0.5 mg/kg) in patients with stimulant (SS) ADHD. Methadone-, (M), methylphenidate (MPH) and placebo were tested on cognitive performance in non-smoking young adults (n=12) diagnosed with DSM-IV ADHD- C. Exclusions included the n-back task of working memory. Results found a significant drug by group interaction (p=0.01) on the total number of hits. For individuals with ADHD nicotine improved the hit rate on all task conditions but methylphenidate did not. For the control group there were no significant effects of nicotine and methylphenidate worsened performance. There were false alarms and reaction time differences between groups and between task conditions but no effects of drugs. The results suggest there may be cholinergic modulation of working memory and provide some support for the use of nicotine in individuals with ADHD. Further research on the vulnerability to smoking associated with cognitive deficits and specifically the role of nicotine in working memory may be used to guide the development of nicotine agents as more effective and safer treatments for individuals with ADHD.

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POS4-43  RELATIONSHIP BETWEEN CIGARETTE SMOKING AND THE SEROTONIN TRANSPORTER GENE-LINKED PROMOTER POLYMORPHISM (5-HTTPLPR) IN ALCOHOL DEPENDENT ADULTS: DOES BIALLELIC VS. TRIALELIC GENOTYPING MATTER?

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Background: Given nicotine’s effects on serotonergic neurotransmission, there has been interest in examining the relationship between the serotonin transporter (5-HTTLPR) polymorphism and the initiation and maintenance of cigarette smoking. Evidence to date regarding the association between 5-HTTPLPR genotype and cigarette smoking in the general population is mixed, with some studies demonstrating an association between smoking and either the long (l) allele or short (s) allele variants of the 5-HTTLPR genotype and others suggesting that there is no relationship between 5-HTTLPR and smoking. Recent research has suggested that the 5-HTTLPR gene is functionally triallelic (S/La/Lg) rather than biallelic (S/L), which could partially explain mixed results. To examine this possibility, we compared biallelic and triallelic 5-HTTLPR genotypes in a sample of alcohol dependent adults to determine whether the relationship between smoking and the serotonin transporter polymorphism differed based on the genotype classification method utilized.

Methods: Treatment-seeking, alcohol dependent men (n=89; 59%) and women (n=61; 41%) completed a semi-structured diagnostic interview and self-report measures to assess substance use, including nicotine. Grouping by 5-HTTLPR genotype was conducted using both the biallelic method (i.e., SS, SL, LL) and the triallelic method, with grouping by degree of purported mRNA expression (i.e., the number of high-activity La alleles present, ranging from 0 to 2). Results: In terms of the relationship between 5-HTTLPR genotype and smoking, there were no differences in the results based on biallelic vs. triallelic genotyping. 5-HTTLPR genotype was not associated with the prevalence of cigarette smoking or nicotine dependence, nor was it related to the onset or heaviness of smoking or severity of nicotine dependence.

Conclusions: Although recent research has suggested that the triallelic method of 5-HTTLPR genotyping may improve understanding of certain psychopathology and response to pharmacotherapy, it does not appear to clarify mixed findings regarding 5-HTTLPR genotype and cigarette smoking or nicotine dependence. This project was supported by NIAAA grants # AA013957; AA013307; NIDA/VA CSP #1022; and by the Department of Veterans Affairs.

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POSS-44 PATTERNS OF SELF-SELECTED ATTEMPTS AT SMOKING CESSION & RELAPSE BY MENSTRUAL PHASE

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A prior study demonstrated that women who are randomly assigned to quit during the follicular (F) menstrual phase compared to luteal (L) phase had fewer days to relapse to smoking. The aim of this study is to determine which menstrual phase was self-selected by these women and if their menstrual phase plays a role in a second relapse. Study participants were between the ages of 18, and 40, smoked at least 10 cigarettes per day for the past year, had regular menstrual cycles, and did not use any hormones or psychotropic medications. Participants (n=138) were randomly assigned to quit smoking in either the F (n=75) or L (n=63) phase, and then attended eight clinic visits over a 26 week follow-up period after their assigned quit date and kept daily record of the cigarettes smoked per day and menstrual cycle. Relapse was defined by continuous abstinence and determined using daily diaries, carbon monoxide breath-analyzer, and saliva cotinine. Participants were, on average, 29.7±6.5 years of age and smoked an average of 16±4.8 cigarettes per day with a mean Fagerstrom score of 3.9±0.5. Overall, women were more likely to select a second quit date within their assigned phase of quit. Additionally, those who selected the L phase experienced a greater number of days before relapse than those who chose the F phase (HR=1.60, p-value =0.01). These data indicate self-selected quit attempts that take place during the F phase may be more likely to lead to relapse to smoking than quit attempts during the L phase. The results of this study agree with our prior report, such that women who attempt to quit smoking in the L phase experience better outcomes than those who attempt to quit in the F phase. Additional research is needed to investigate how this relationship may vary with the use of pharmacotherapy.

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POSS-45 GENETIC MODERATION OF SMOKING DEPRIVATION EFFECTS ON NEUROCOGNITIVE VARIATION

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Nicotine deprived smokers generally exhibit lowered attentional control, which can be indexed by the P3 component of the event-related brain potential (ERP). Based on the demonstrated relationship between dopamine activity and attentional control, research in our lab has examined whether genetic variants at the dopamine D2 receptor (DRD2) gene Taq1a polymorphism site modulate the effects of smoking withdrawal on P3 amplitude. Specifically, we reported that overnight deprived smokers who carried at least one copy of the A1 allele displayed reduced P3 amplitude for nogo trials within a go-nogo (response inhibition) task. In the present study, we further examined DRD2 Taq1a moderation of smoking deprivation effects on attentional control, focusing on P3a and P3b component ERP amplitudes elicited by a three-stimulus oddball task. We compared 25 smokers who were randomly assigned to overnight deprivation with 23 smokers instructed to smoke as usual prior to performing a computerized oddball task. In addition, 23 nonsmoker controls were included. The oddball task included visual presentation of 240 trials (inter-stimulus interval 1.5 sec). Trials included randomized presentation of a “B” as standard trials (70%), an “A” as rare target trials (15%) that evoke P3a, and a bright arousing 4 by 5 inch blue rectangle as rare non-target trials (15%) that evokes P3a. Participants were instructed to press a key in response to targets only. Results indicated that A1 carriers had reduced P3a amplitude following overnight deprivation relative to both satiated smokers and nonsmokers. This effect was driven by frontal sites. These findings extend the association of DRD2 Taq1a variants as a moderator of smoking deprivation effects on self-control. One implication of this research is that Nicotine agonists targeting cognitive function may provide improved smoking cessation pharmacotherapy among individuals with attentional deficits and/or reduced dopamine activity.

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POSS-46 GENDER SPECIFICITY IN STRESS-INDUCED CIGARETTE CRAVING RESPONSES

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Considerable evidence suggests that women find it more difficult to quit smoking than men do. One compelling precursor to cessation failure that has received much attention is stress. Empirical studies in both the human and animal literature have demonstrated that laboratory stress induces significant levels of drug seeking and cigarette craving, and initial evidence suggests that women may have particularly strong craving reactions after exposure to social- and imaginal physical threat-related stressors. The objective of the present study was to provide further evidence for this gender difference and to test the hypothesis that women would have stronger cigarette craving reactions to a cognitive stressor than men. To that end, female (n=70) and male (n=61) nicotine-dependent smokers (Mean age = 36.5 years, 30% African American, 34% Caucasian, 36% Hispanic, 17.6 ciga rettes/day, FTND = 5.2) completed a computerized Stroop color-word interference task and a neutral task (handling a stapler), separated by a 3-minute rest. Self-reported cigarette craving and emotional distress levels (0-100) were assessed before and after each task. Repeated measures ANOVAs were employed for each outcome (distress, craving) to analyze the data. Consistent with the study hypotheses, findings indicated that while men and women had comparable increases in distress levels following the Stroop task, women exhibited larger increases in cigarette craving than men (Group by Time interaction: p < 0.05). Indeed, while women’s cravings increased approximately 10% following the task, levels in men declined slightly. These results add to a growing literature documenting differences between female and male smokers and suggest a possible mechanism that may contribute to gender differences in cessation success.

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POSS-47 THE EFFECTS OF CHRNAS AND EARLY STRESS ON NICOTINE DEPENDENCE

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Because recent studies have suggested that a separate genetic (i.e., CHRNAs rs16969968) and environmental (i.e., early stress) (Lord & Taylor, 2006) vulnerability marker predicts the later use of nicotine, we aimed to determine a possible interaction between these two factors on the development of nicotine dependence. In the current study, we examined 47 moderate to heavy smokers (mean age = 32, SD = 10; mean cigarettes per day = 17.16, SD = 3.4) with 23 participants carrying the risk genetic variant for CHRNAs rs16969968 (i.e., A allele). We assessed (1) early stress using an 8-item questionnaire pertaining to exposure to both physically- and psychologically-stressful events prior to 18 years of age, and (2) current nicotine dependence with the Fagerstrom Test of Nicotine Dependence (FTND). We hypothesized that the presence of early stress, a report vulnerability marker for the development of daily nicotine use, in combination with the CHRNAs rs16969968 A genotype would be associated with current nicotine dependence. Our ANOVA analyses showed that there was a significant interactive effect of genotype and early stress on FTND scores such that those positive for the risk allele and early stress had greater FTND scores than those without the risk allele and early stress [F(7, 46) = 4.21, p < 0.002]. We also found a significant main effect of the CHRNAs on FTND scores [F(1, 46) = 2.58, p < 0.001]. The main effect of early stress on FTND scores did not reach a level of significance, which could be attributed to lack of power from our relatively small size or from our early stress measure. Nevertheless, our results are congruent with previous research that the CHRNAs rs16969968 A allele is associated with greater nicotine-related problems, which underscores the important role of the CHRNAs rs16969968 in nicotine dependence.

Department of Energy.

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POS4-48
COGNITIVE PERFORMANCE DURING ABSTINENCE CHALLENGE PREDICTS RELAPSE
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Adverse effects of nicotine abstinence on cognitive processing are well documented in animal and human studies. However, less is known about the contribution of cognitive deficits to smoking relapse. To clarify this relationship, we examined whether cognitive performance after 3 days of nicotine abstinence predicts ability to remain abstinent for a subsequent 7-day period. Seventy-three treatment-seeking smokers completed a 3-day abstinence challenge (while taking placebo). On day 3 of abstinence, they completed computerized tasks assessing sustained attention (Continuous Performance Task) and working memory (N-back task). They were then exposed to a programmed smoking lapse and then were instructed to try to abstain from smoking for the next 7 days (while remaining on placebo). Smoking status was biochemically verified during 3 study visits during the 7-day observation period. Smokers were able to abstain for 7 days (41%) were compared to those who relapsed (59%) with respect to processing efficiency (correct reaction time) on the cognitive tasks. Performance on the N-back task of working memory following the abstinence challenge was a significant predictor of ability to remain abstinent. Slower reaction time (worse performance) on the 3-back task (highest working memory load) predicted relapse (F=4.2, p=.006). Worse performance on the CPT was marginally associated with relapse. These data suggest that working memory function during nicotine abstinence may play an important role in the ability to sustain abstinence in treatment-seeking smokers.

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POS4-49
GENETIC PREDICTORS OF MOTIVATION TO QUIT SMOKING
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Various facets of smoking behavior show substantial heritability, with several reviews suggesting at least a 50% genetic contribution towards smoking initiation, persistence, and nicotine dependence. Several candidate genes have been examined in relation to smoking variables. In the current study, we examined the relationship between motivation to quit smoking and genetic polymorphisms that have shown some concordance with smoking behavior (DRD2 Taq1a, DRD4 VNTR, DRD2-141C Ins/Del, 5-HTT). As motivation to quit is a fairly good predictor of smoking cessation, examination of potential genetic influences on motivation may lead to more refined treatments for nicotine dependence. The current analyses were conducted as part of a study investigating the effects of a brief computerized intervention on motivation to quit smoking. Participants were 114 smokers ages 18-50 (mean =26) who smoked at least 10 cpd (mean= 17) for at least one year. Smoking status was biochemically verified during 3 study visits during the 7-day period. Results: There were no significant differences between groups with respect to demographic characteristics. There was no main group effect in subjective craving although there was a main effect of time with craving being the highest following overnight abstinence and lowest after smoking (p=0.001). There was no significant group by time interactions. Results from the Nicotine STROOP suggest that MD smokers react more quickly to smoking-related words than controls. Greater BOLD activation was seen in the bilateral frontal gyrus, fusiform gyrus and superior or occipital gyrus in the MD group compared to controls. However, control smokers had greater activation in the superior frontal gyrus and globus pallidus compared to MD smokers at both pre- and post-smoking conditions.

Conclusions: These results confirm previous findings showing neural activation in the mesocorticolimbic system and visuospatial attention circuit in response to smoking cues in tobacco dependent individuals. They also show important differences in expressed motivation that may be due to smoking-related stimuli compared to controls. These findings may have implications regarding smoking cessation and relapse in this population.

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SRNT • Poster Session 4

POS4-50
DIFFERENCES IN REACTIVITY TO SMOKING CUES IN DEPRESSED VERSUS NON-DEPRESSED SMOKERS: AN FMRI STUDY
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Purpose: Although the high comorbidity between tobacco dependence (TD) and major depression (MD) is well-documented, little research has focused on the neurobiololy of this association. The objective of this study was to examine the neural substrates involved in smoking cue reactivity in MD smokers compared to control smokers using fMRI.
Methods: Using fMRI, blood oxygen level dependent (BOLD) response to smoking-related pictures was measured in current daily dependent smokers who either met criteria for a current MD (n=6) or did not (n=10). Subjects were scanned in the morning following overnight (10 to 12 h) abstinence from smoking and were scanned again after smoking a cigarette. A random effects analysis was performed to compare group-dependent cue-reactivity under abstinent and smoking conditions. Statistical significance for the interaction F-tests was set at p<0.005 (uncorrected) in a minimum cluster of 10 contiguous voxels.

Results: There were no significant differences between groups with respect to demographic characteristics. There was no main group effect in subjective craving although there was a main effect of time with craving being the highest following overnight abstinence and lowest after smoking (p=0.001). There was no significant group by time interactions. Results from the Nicotine STROOP suggest that MD smokers react more quickly to smoking-related words than controls. Greater BOLD activation was seen in the bilateral frontal gyrus, fusiform gyrus and superior or occipital gyrus in the MD group compared to controls. However, control smokers had greater activation in the superior frontal gyrus and globus pallidus compared to MD smokers at both pre- and post-smoking conditions.

Conclusions: These results confirm previous findings showing neural activation in the mesocorticolimbic system and visuospatial attention circuit in response to smoking cues in tobacco dependent individuals. They also show important differences in expressed motivation that may be due to smoking-related stimuli compared to controls. These findings may have implications regarding smoking cessation and relapse in this population.

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POS4-51
SMOKING CHARACTERISTICS AND NICOTINE INTAKE IN INDIVIDUALS WITH BIPOLAR DISORDER
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Cigarette smoking is common in bipolar disorder with prevalence rates of about 60% in clinical, research, and community samples. However, genetic similarities between bipolar disorder and schizophrenia there is potential for similarities in smoking patterns between these groups that warrant further study. This study sought to describe smoking behavior and nicotine intake among 44 smokers with bipolar disorder (BPD) as compared to 51 control smokers (CON). Subjects underwent a comprehensive assessment of their tobacco use and provided blood specimens for measurement of serum nicotine, cotinine and 3-hydroxycotinine (3HC). A ratio of 3HC/cotinine is a marker of CYP2A6 metabolic activity and a useful nonsmoker measure of nicotine metabolism rate. BPD were not different in baseline smoking characteristics (i.e., cigarettes per day, exhaled CO in ppm, Fagerstrom summary score and years of smoking) compared to CON. There were no differences in serum nicotine levels drawn five minutes after a morning cigarette among smokers with BPD as compared to CON smokers (29.9 vs. 30.5 NSS). The two groups were also similar in their serum cotinine levels (292.6 vs. 286.5 NSS). There were few signifi-

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PO54-54 DETERMINATION OF THE EFFECTS OF NICOTINE AND TOBACCO SMOKE ON COGNITIVE FUNCTION IN SMOKERS ABSTINENT FOR ONE WEEK

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Difficulty concentrating is a primary cognitive deficit reported by smokers during abstinence, and it may lead to relapse within the first few days following smoking cessation. Nicotine replacement therapies, such as the nicotine inhaler and the step-down, low-nicotine cigarettes, were developed to assist in promoting abstinence by alleviating withdrawal symptoms, and may reverse abstinence-induced worsening of performance on cognitive tasks. The current project aimed to inves- tigate effects of abstinence on cognitive performance over the first week of smoking cessation and to delineate the effects of nicotine and tobacco smoke on performance at one week of abstinence. Nineteen subjects abstained from smoking for one week. They were administered a cognitive battery before stopping smoking (baseline), at 2.1±1.3 h of abstinence; and again after a challenge. They were randomly assigned to one of the challenge groups: low-nicotine (0.6 mg) (n = 6, age = 31.0 ± 1.4 y) and nicotine-free (0.05 mg) (n = 7, age = 27.0 ± 5.9 y) cigarettes, and nicotine inhaler (10 mg) (n = 6, age = 34.5 ± 7.6y). Cigarettes were delivered to a flow meter (3 L/min) and no substantive differences were observed except for average peak flow (p = .06). At 1 d of abstinence, there was a trend toward better performance on psychomotor speed (TMT-B; 2.93 ± 0.13 vs. 2.83 ± 0.13; p = .082) as compared to baseline. Over the 7-d abstinence period, there was a trend toward worse performance on long-term verbal memory task (HVLT-R; p = .09) while performance on the working memory task improved (N-Back-2; p = .005) compared to baseline. Abstinence/rechallenge, there was a small improvement on executive control (SCWT) in the nicotine inhaler group (p = .02) and on working memory reaction time (N-Back) in the low-nicotine nicotine group (p = .05) as compared to pre-challenge performance. Overall, these preliminary results suggest positive and negative effects of smoking cessation on different aspects of cognition; and nicotine and tobacco smoke play distinct roles on cognitive perfor- mance in abstinent smokers.
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PO54-56 PAIN AS A MOTIVATOR OF SMOKING: MECHANISMS OF ACTION

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Smoking prevalence among chronic pain patients is double that of the general population. Despite well-documented associations between pain and smoking, pain has received surprisingly little attention as an internal cue for smoking. Our previous work provided the first causal evidence that pain is a potent motivator of smoking (Ditre et al., 2008, J Abnorm Psych). The goal of the current study was to build upon this finding by testing theoretical mechanisms that may impact the causal relationship between pain and increased motivation to smoke by manipu- lating hypothesized mediating (use of pain-coping behaviors) and moderating (smoking-related outcome expectancies) variables, as influenced by social learn- ing theory-based conceptualizations of pain coping and addiction motivation. Participants smoked at least 15 cpg. A cold-pressor was used to induce pain in 132 smokers randomly assigned to one of four conditions in this 2X2 crossed-factorial design. Factor 1 consisted of instructions and training to utilize an established pain-coping distraction task, and Factor 2 consisted of a video-based expectancy challenge (designed to reduce expectancies that smoking is an effective pain-cop- ing strategy). Dependent measures included self-reported urge to smoke and observation of immediate smoking behavior. Because the current study was ongo- ing at the time of abstract submission, the following analyses were restricted to only 69% of the intended sample. Manipulation checks verified that targeted cop- ing- and smoking-related variables were affected as hypothesized (ps < .001). Preliminary analyses revealed the hypothesized main effect for the expectancy challenge (based and working with the experimenter for smoking), with participants who watched the experiment video (vs. the control video) reporting less desire to smoke following pain induction (p < .01). Complete analyses will be presented at the annual meeting (e.g., tests of main effects, inter- actions, mediators, and moderators). Discussion will address (1) pain as an inter- nal cue for smoking, (2) smoking cessation for individuals in pain, and (3) tobacco dependence as a model for addiction research in the chronic pain population.

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PO54-57 GENDER DIFFERENCES IN SUBJECTIVE REACTIONS TO CIGARETTE SMOKE WITH VARYING NICOTINE LEVELS

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Sensory stimuli associated with exposure to nicotine appear to play a critical role in the maintenance of smoking behaviors. Emerging evidence suggests that females and males differ in terms of mechanisms that maintain tobacco smoking, including sensory stimulation, although the findings on this point are mixed. This study evaluated male and female smokers (N=31) on their subjective reactions to low nicotine Quest® 1 and denicotinized Quest® 3 cigarettes using a double-blind procedure. All participants smoked both denicotinized and nicotine cigarettes in counter-balanced order. Cigarette butts were measured after smoking in order to determine how much of each type of cigarette had been consumed. Sensory reactions to smoking were evaluated on seven-point Likert scales assessing participants’ satisfaction, aversion, enjoyable sensations, reduced craving, and psychological reward. Our results indicated that female participants smoked significantly more of the nicotine cigarettes relative to the denicotinized cigarettes compared to males, F(1, 29) = 8.865, p = .006. In addition, there was a trend for females to spend considerably more time smoking the nicotine cigarette relative to the denicotinized cigarette compared to males, F(1,29) = 2.945, p = .097. However, female participants rated the two cigarette types more similarly on four of the five cigarette evaluation measures than did male participants; for the enjoyable sensations measure the difference between females and males reached significance, F(1, 29) = 4.627, p = .040. Thus, as in other studies, our results were mixed: Data indicating that females smoked more of the nicotinized cigarettes sug- gests they are more sensitive to pharmacologic aspects of smoking than men. On the other hand, the fact that they rated both types of cigarettes more similarly than men suggests that they were responding more to sensory aspects of smoking than to pharmacologic factors. Clearly, further research in this area is warranted.

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POS4-58  
CONVERGENT VALIDITY OF MULTIPLE MEASURES OF NICOTINE DEPENDENCE CONTROLLING FOR SMOKING HISTORY

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Despite common theoretical assumptions that nicotine dependence is a direct result of nicotine exposure, recent evidence suggests that substantial variance in dependence remains even when controlling for frequency and duration of use. This could be due to measurement error, or it could represent meaningful variance in the severity of dependence. To examine this, we assessed the relationship between use and nicotine dependence across multiple dependence scales, and we evaluated their convergent validity after removing variance associated with use. Subjects were 120 daily smokers, who smoked 10-30 cigarettes per day (CPD). Subjects self-reported smoking history (CPD, years smoking, years smoking daily) and completed five nicotine dependence measures: the WISDM-68, HONC, FTND, NDSS, and DSM-IV. Multiple regression analyses revealed that smoking history variables, collectively, explained less than 13 percent of the variance in any dependence measure or subscale. After controlling for smoking history, all dependence measure total scores were significantly related to one another, with variance explained ranging from 8 to 53 percent. Among subscales, the Priority and Stereotypy scales of the NDSS, and the Social-Environmental Goods and Weight Control scales of the WISDM-64 were unique in their limited correlations with other dependence measures or subscales. Subscales assessing similar content tended to be highly correlated, but substantial correlations were observed even among subscales with very little content overlap. These results suggest that meaningful variance in severity of dependence can be observed after controlling for frequency and duration of use. Very different measures of nicotine dependence may be tapping into the same latent construct of dependence, which is largely independent from item content, and is driven by factors other than self-reported smoking history.

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POS4-59  
COGNITIVE AND MOOD CHANGES AFTER 18 HOURS OF TOBACCO DEPURATION IN ADOLESCENT SMOKERS


Previous research with nicotine-dependent adults has shown that short-term tobacco depriviation can impair cognition, worsen mood, and increase intensity of nicotine withdrawal symptoms. However, little research has investigated the effects of tobacco deprivation on these response domains in adolescent smokers. The purpose of this study was to examine cognitive performance and mood before and after 18 hours of tobacco deprivation in adolescents during the pretrial phase of a smoking cessation trial. Thirty-two nicotine-dependent adolescents were tested at baseline during alcohol smoking and following 18 hour of tobacco deprivation. Measures included selective attention (2-Letter Search), working memory (n-back), Positive and Negative Affect Scale (PANAS), and Minnesota Nicotine Withdrawal Scale (MNWS). Mean breath carbon monoxide was significantly lower after deprivation than at baseline (4.2 vs. 12.2 ppm, p < .001), indicating compliance with the deprivation requirement. Participants made more errors on the 2-Letter Search task following deprivation compared to baseline (p < .05), however, response time was not affected. There was a significant decrease in accuracy on the n-Back task after deprivation compared to baseline (p < .05), and reaction time was significantly slowed (p < .01). Positive affect scores on the PANAS were significantly decreased after deprivation (p < .05), but negative affect scores were not changed. Scores on the MNWS were significantly increased after deprivation compared to baseline (p < .05). In this sample of nicotine-dependent adolescents who were seeking treatment for smoking, we observed impairment on tests of working memory and selective attention, decreased ratings of positive mood, and increases in self-reported nicotine withdrawal symptoms after 18 hour of tobacco deprivation. These effects are very similar to changes experienced by adult smokers during early nicotine withdrawal and suggest that adolescent smokers face comparable challenges in quitting smoking.

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POS4-60  
SECONDHAND SMOKE EXPOSURE LEADS TO SUBSTANTIAL OCCUPANCY OF BRAIN NICOTINE ACETYLCHOLINE RECEPTORS

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Background: Secondhand smoke (SHS) exposure leads to a detectable accumulation of nicotine in the body. To verify the hypothesis that SHS exposure is sufficient to occupy brain alpha/beta2 nicotinic acetylcholine receptors (nAChRs), we measured specific binding of the nAChR radiotracer 2-[18F]fluoro(2-3)(S)azetidinylmethoxy) pyridine (2-F) before and after SHS exposure using Position Emission Tomography (PET).

Method: Five tobacco-dependent cigarette smokers (> 15 cigarettes per day) underwent two PET scanning sessions, during which they received a bolus-plus-infusion administration of 2-F (randomized order, one week apart). At the middle of one scanning session, when the brain and blood levels of 2-F reached an approximate steady-state, each research subject sat in the passenger’s seat of a car and was exposed to SHS from a smoker seated in the driver’s seat (who smoked 4 to 6 cigarettes over the course of one hour to maintain an average air concentration of 15-25 ppm above the smoking (control) session), research participants sat in the car but received no SHS exposure. Results: CO levels were significantly higher during the SHS exposure than the control no-SHS exposure (3.8 ± 0.7 vs. 0.5 ± 0.1 ppm, p < .007), indicating that (as expected) subjects were exposed to a low-to-moderate level of SHS. There was statistically significant SHS-induced occupancy of nAChRs in all brain areas studied (20 ± 5%; 22 ± 5%; and 29 ± 5% for thalamus, midbrain, and cerebellum, respectively). This occupancy was associated with anxiety and depression.

Discussion: An hour of low-to-moderate SHS exposure results in significant brain nAChR occupancy, which corresponds to smoking roughly 1/10th of a regular smoking session. This brain nAChR occupancy may last for symptomatic relief (e.g., headache) that some people experience when exposed to SHS. Furthermore, the present study may demonstrate a mechanism by which postnatal SHS exposure leads to neurodevelopmental problems (such as irritability, oppositional defiant behavior, conduct disorders, and attention deficit hyperactivity disorder) and Nicotine Dependence itself in childhood and adolescence.

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POS4-61  
ABERRATIONS IN RESTING FUNCTIONAL NETWORKS IN NICOTINE-DEPENDENT ADULTS: AN ICA APPROACH

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The advent of independent component analysis (ICA) for fMRI data has allowed for model-free investigation of interconnected functional networks in the brain. While ICA of resting state (i.e., without a cognitive task) has revealed consistent networks across samples of healthy individuals, more recent studies have also shown that disordered populations, such as people with schizophrenia and marijuana abusers, have aberrant resting state networks. The goal of the current study was to investigate whether similar aberrations are present in nicotine-dependent individuals. To that end, we scanned 18 non-smoking and 18 nicotine dependent adults (mean FTND = 8, SD = 2.7) using a resting fMRI paradigm. Our findings indicated several differences between non-smokers and smokers. First, spatial analyses showed differences in several resting state networks, which included the default mode network and the executive network. Smokers had greater activation in the middle-frontal gyrus and superior temporal gyrus within the default mode network and in the anterior cingulate gyrus, orbitofrontal gyrus and insula within the executive network (cluster-corrected p<.001, t=3.34). Second, power spectrum analyses showed that for both of these networks, smokers had greater activation in the higher frequency bands (t>2.0, p<.01). Differences between smokers and non-smokers in these resting state networks coincide with differences found during cognitive fMRI paradigms. For instance, neuroimaging studies have illustrated that the mechanism by which nicotine enhances attention is through nicotine-asheduced altered temporal frequency and spatial location of the resting state networks, which indicates the possibility of a dysfunction in connectivity resulting in under- or over-activation by key regions.

Department of Energy.

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Tobacco use is associated with an elevated cortisol awakening response: evidence from a daily diary study with hotel workers

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Cortisol is a hormone associated with the hypothalamic-pituitary-adrenal (HPA) axis response to stress, and the HPA axis has been implicated in addiction. With regard to cigarette use, cortisol changes following abstinence may predict early relapse (al’Abri et al., 2004). Smoking appears to directly increase cortisol levels in acute settings, but little is known about cortisol levels among smokers in their daily lives. The cortisol awakening response (CAR) is the increase in cortisol from the time since waking up in the morning to approximately 30 minutes later. The CAR is regulated by physiological mechanisms that are different from mechanisms that control stress-induced cortisol release (Sleptoe et al., 2006) and it is influenced by several factors, including genetics, health status, socioeconomic status, and, perhaps, tobacco use. The literature on tobacco use and the CAR is limited and has yielded conflicting results. We were able to examine the effects of tobacco use on the CAR as part of a larger project examining daily stress and well-being of hotel workers using a daily diary (n=101) completed by 8 daily diary telephone interviews where they reported on stressful events and the rate of tobacco use. Workers provided 4 saliva samples across the day on 4 of the 8 interview days: awakening, 30 min after wakening, lunchtime, bedtime. Sixteen percent (N=16) of the workers used tobacco (5-40 cig/day) or chew (11-67 times/day). Workers displayed a significant CAR across the 4 days of saliva collection [F(4,72)=3.68, p<0.05]. Tobacco users displayed an elevated CAR across the 4 days compared to non-users [F(4,72)=3.02, p<0.05], a finding consistent with a handful of published reports. Results suggest that tobacco users are exposed to elevated awakening levels of cortisol, the long-term effects of which are unknown at this time. As prior studies, workers were asked not to consume tobacco products between the first two saliva samples of each day, yet it is possible that this elevated CAR results of the acute effect of nicotine on cortisol. Future studies should measure salivary cotinine levels to confirm compliance with abstinence instructions.

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Electrophysiological and behavioural evidence of nicotine’s distinctive effect on corticosteroid filter properties in non-smokers

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Nicotine is thought to enhance cognition in part by its central actions on sensory and attentional functions that preferentially attenuate the selection and processing of irrelevant input. The objective of this study was to utilize electrophysiological recordings to examine attentional effects on involuntary attention switching following distraction processing and as reflected in event-related potential (ERP) components. In 20 (11 females) non-smokers assessed in placebo and nicotine ingestion from distraction processing and as reflected in event-related potential (ERP) components. In 20 (11 females) non-smokers assessed in placebo and nicotine gum (6 mg) sessions, electrical activity and behavioural performance were assessed with an auditory-visual distraction paradigm requiring discrimination of visual stimuli preceded by standard and deviant tones. Auditory deviance slowed response times and increased response errors, the effects being more evident with large versus small-deviants. Nicotine failed to prevent deviance-induced behavioral distraction; however, it dampened overall response times. ERPs indicated nicotine had no effect on the automatic detection of deviants, as evidenced by the mismatch negativity (MMN), but it dampened electrical signs (P3a) of deviant-induced involuntary attention switching and induced increased attentional re-focusing following switching as shown by a greater amplitude of the re-orienting negativity (RON) component. Nicotine alters selection mechanisms involved in the suppression of and recovery from distractors and these cognitive actions may in part motivate nicotine use.

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Interplay of distinct genetic risk factors and parental monitoring in risk for nicotine dependence

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Objective: Both genes and environments contribute to the development of nicotine dependence. The goal is to study parental monitoring can modify the genetic risk associated with nicotine dependence. This project builds on the replicated findings of association between single nucleotide polymorphisms in the nicotinic receptor genes, providing a unique opportunity to study the independent and interactive association between genetic and environmental factors.

Methods: In a cross-sectional case control study control study of US-based community sample of 1610 subjects, we examined the effect of parental monitoring on risk associated with two distinct variants in the nicotinic receptor genes CHRNA5(rs16969968) and CHRNA3(rs578776). We conducted a systematic series of regression models in all subjects and subgroups stratified by the genetic risk factors.

Results: Both low parental monitoring and genetic variants increased risk of nicotine dependence. The risk allele of SNP rs16969968 showed a stronger association with nicotine dependence with the OR of 4.12, 95% C.I. of 1.63-10.5 in the group with lowest quartile parent monitoring, as compared to an OR 1.38, 95% C.I. of 1.74-2.57 in the group with highest quartile parent monitoring. The two ORs were statistically different with homogeneity z=1.92, p=0.027 (1-tailed). There was a significant interaction between the risk SNP rs16969968 and environmental risk level. In contrast, no significant changes were observed for the risk allele of rs578776 across different parent monitoring risk levels.

Conclusions: Our study represents one of the first samples where specific genetic and environmental factors jointly studied. The results of this study can modify the genetic risks for nicotine dependence. The risk associated with genetic variants was modified by environmental exposures. Where genes and environment act together, the risks are increased, due to these genes may be mitigated by interventions targeting specific environmental exposures.

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Implied cognitions and the behavioral processes underlying smoking dependence: summarizing a program of research

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Objectives: The findings of the Implicit Cognition and Behaviour Research Group’s (http://psychology.nuim.ie/IRAP/IRAP_1.shtml) research program will be summarized as an illustrative example of the utility of incorporating the methodological weaknesses suffered by self-report measures. Methods: Implicit measures target relatively automatic, impulsive verbal behaviors that precede deliberation. They were captured using computerised response-time measures that required participants to respond under time pressure to a series of smoking-related word-matching tasks; response-time differentials were then used to index verbal biases prescribing pro-smoking expectancies. Particular attention will be paid to the methods utilized to mitigate response-time problems common to self-report measures. Results: These methods have been used to study a variety of smoking-related expectancies. Conclusions: This research program demonstrates the unique advantages of utilizing implicit measures to study smoking expectancies.
PO4-66 CARCINOGEN BIOMARKERS IN SMOKERS WITH SCHIZOPHRENIA
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Smokers with schizophrenia (SCZ) and bipolar disorder (BPD) are frequent and heavy smokers with evidence of increased nicotine intake per cigarette. Increased nicotine intake implies increased carcinogenic exposure. Urinary carcinogen metabolites (NNAL (4-(methylaminonitrosamino)-1-(3-pyridyl)-1-butanol) are relatively easy to collect and provide important information about carcinogen (NNK) exposure and uptake. The purpose of this study was to measure human urinary car- cinogen metabolites in smokers with schizophrenia and compare them to smokers without mental illness as well as smokers with bipolar disorder. An individual’s exposure to tobacco carcinogens is dependent not only on absolute intake but also on their capacity to metabolize or activate carcinogens. We hypothesized that smokers with SCZ would have higher urinary levels of total-NNAL compared to controls. We collected urine from one hundred twenty four subjects (30 schizo- phrenia, SCZ; 44 bipolar, BPD and 50 controls; CON) on a usual smoking day. Since this study was part of a larger study that included measures of nicotine intake and smoking puff topography (100 smokers with schizophrenia, 100 smokers with bipolar disorder and 100 without mental illness), all subjects also had blood draws for nicotine and cotinine. Smokers were not different in baseline character- istics including gender, cigarettes per day, expired carbon monoxide, or total FTND score. Mean serum nicotine levels were higher in SCZ compared to both CON (7.9 vs. 20.5, p = 0.009) and BPD (37.9 vs. 0.009) who smoked similar numbers of cigarettes per day. Mean total NNAL values (pmol/mL urine) were lowest in smokers with SCZ (11.6, SD 0.88) compared to CON (1.54, SD 1.35) or BPD (1.03, SD 0.91). There are prior reports of lower than expected levels of measured carcinogens in smokers. The exact reason for this is not known but one possibility is that heavy smoking induces other pathways of NNK metabo- lism (mainly a-hydroxylation) leading to decreased NNAL. It is also possible that metabolism of NNK or NNAL was affected by the medications used in SCZ and BPD and further study is warranted.

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PO4-67 INTERACTIONS BETWEEN NICOTINIC RECEPTOR POLYMORPHISMS AND AGE AT ONSET OF REGULAR SMOKING IN CONFESSION LIABILITY FOR NICOTINE DEPENDENCE
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Background: Nicotinic receptor expression is strongly impacted by nicotine exposure in a manner that may be age-dependent. Accordingly, the association between nicotinic receptor polymorphisms and smoking behavior may vary with the age at which smoking is initiated.

Objective: To examine interactions between age-at-onset of smoking and nicotine receptor polymorphisms in the in the CHRNA5-A3-B4 gene cluster, in predicting the transition from smoking to nicotine dependence.

Methods: Logistic regression analyses predicting nicotine dependence from CHRNA5-A3-A4 polymorphisms, AOS, and AOS-by-polymorphism interaction terms using data from the Collaborative Study on the Genetics of Nicotine Dependence. The sample comprised 813 nicotine dependent cases, and 797 non-dependent controls, who had smoked at least 100 cigarettes in their lifetime. Based on main effect association results and analysis of linkage disequilibrium, 9 tag SNPs were chosen for analysis. Results: Three weakly correlated SNPs exhibited significant or near-significant interactions with AOS in their association with nicotine dependence, including rs16969986, a non-synonymous coding polymorphism that has been repeatedly implicated in nicotine dependence and smoking behavior. In each case, the direction of the interaction was consistent with later gene effects for later onset of smoking. In a multivariate model assuming a single interaction term for all three polymorphisms, the interaction was significant (p=0.002). This increase in the main effect odds ratios of 5% for each one-year increment in AOS.

Conclusion: These results suggest that polymorphisms in the CHRNA5-A3-B4 cluster are primarily important for later onset smokers (ages 17 and above). This is in agreement with previous research on the influence of smoking initiation in a separate, predicting severity of nicotine from CHRNA5-A3-B4 polymorphisms and their interaction with age at onset of daily smoking sample (Weiss et al., PLoS Genet, 2008 Jul 11;4). Reasons for the apparent contradiction are discussed. Replication studies are underway in an independent COGEND sample.

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PO4-68 GENE BY BEHAVIORAL COUNSELING INTERACTION ANALYSIS IN THREE SMOKING CESSATION SAMPLES
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Smoking cessation clinical trials randomizing participants to behavioral therapy arms usually differ in counseling intensity, and/or specificity have shown significant positive association with abstinence. Genetic factors, through influence on cogni- tive functions, may influence an individual’s reaction to behavioral therapy. We evaluated the influence of behavioral therapy and two genes on abstinence status in participants from 3 different smoking cessation studies with mean [SD] study size of n=333 [16], 3 month abstinence of 42% [12%], and less intensive-specific counseling fraction of 45%[7%]). Age, sex, ethnicity/race, FTND and smoking ces- sation pharmacotherapy (bupropion, varenicline or placebo) were used to adjust abstinence status while estimating interaction between behavioral therapy and genotypes from the SLC6A3 3- VNTR (DAT1) and the DRD2 linked rs1800497 SNP in ANKK1 (TaqA). Counseling intensity had a significant (P<0.036) negative influence on abstinence rates irrespective of genotype. Individuals with the other two studies counseling intensity was non-significantly positively associated with abstinence rate. Interaction of the DAT1 VNTR resulted in a significant (P=0.020) interaction in Study 1, a sim- ilar but non-significant effect in Study 2, and no effect in Study 3. In Studies 1 and 2, participants with with the TaqA A1 allele who were randomized to less intense behavioral counseling. Interaction of the TaqA SNP to the model did not result in significant interaction with behavioral therapy in any study. Inclusion of both loci in the model resulted in a significant (P<0.01) interaction in Study 1, and suggestive (P=0.073 and P=0.052) interactions in Studies 2 and 3. Participants from each study with one DAT1 A1 allele and one TaqA A1 allele were more likely to be abstinent when randomized to more intense or specific behav- ioral counseling. Additional studies, harmonization of behavioral counseling modalities, and genetic polymorphisms with greater a priori likelihood of involve- ment in functions potentially mediating response to behavioral therapy, would each improve the power to detect genes that interact with behavioral therapy to influ- ence abstinence.

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PO4-69 RELATIONSHIP OF MENTHOL AND ETHNICITY WITH TOBACCO SPECIFIC
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Preference for mentholated cigarettes varies by ethnicity creating a challenge to distinguish the impact of menthol on smoke constituent exposure. The specific aim was to characterize tobacco use, nicotine and tobacco-specific effects of menthol and ethnicity on tobac- co specific nitrosamines and polycyclic aromatic hydrocarbons (PAH) in smokers. In a clinical laboratory at the Ohio State University Clinical Research Center, a two- factor design of menthol cigarette preference and ethnicity (African American and European American) was implemented. Stratified recruitment yielded similar num- bers of menthol and nonmenthol smokers in each ethnicity category. In addition, gender was balanced within each ethnicity-subsample. Participants smoked their usual brand of cigarettes throughout the 36 hr inpatient protocol and a 24-hour urine sample was collected to assay NNAL and NNAL glucuronide, 22 hydroxylated PAH metabolites, and menthol glucuronide concentrations. Current sample size of 121 is 86% of the targeted 140 participants. 45% of the sample is African American, 55% smoke menthol cigarettes and 48% are women. Average age of 29.2 ± 8.7 yrs. Average cigarettes per day was 15.8 ± 6.6 with 12.3 years of regular smoking, average cotinine of 214 ng/ml, and 58% of the sample smoked their first cigarette of the day within 15 minutes. Results reflected that randomization of a single PAH, NNAL, and menthol assays completed to date. Age was related to ethnicity and used as a covariate. There was a significant main effect of ethnicity on NNAL free and total concentrations with African Americans higher (p=0.014). There were no significant cigarette preference or interaction effects. A main effect of ethnicity was noted on ratios of PAH glucuronide to the summed concentration of sulfate and glucuronic acid conjugates in 8 of 10 metabolites with African Americans being lower than European Americans. The relationship of total urinary menthol concen- tration with smoking status was n=0.56 (p<0.001) and it correlated with all PAH metabolites, while menthol cigarette preference did not.

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POS4-70  THE EFFECTS OF MEP ON NICOTINE REINFORCEMENT AND Dopamine Release in the ACCUMBAL SHELL

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It is widely accepted that dopamine projections from VTA to nucleus accumbens (Nac) play an important role in the neurobiological mechanisms underlying nicotine dependence. Furthermore, increase of dopamine responsiveness in the Nac shell mediates the rewarding and reinforcing properties of stimulant drugs of abuse, including nicotine (Di Chiara, 2002; Behav. Brain Res., 137:75-114). In this study the putative role of mGlu5 receptors on nicotine-seeking behaviour, and nicotine-induced increases in dopamine overflow in the Nac shell have been investigated. Male Sprague-Dawley rats were trained to self-administer nicotine (0.3, 0.5, or 1.0 mg/kg i.p.) and nicotine-metabolites (mGlu and ionotropic receptors (Grillner & Svensson, 2000; Synapse, 38:1-9). In vivo pretreatment with MEP 2.5 mg/kg i.v. 30 minutes before the session, significantly reduced lever-pushing for nicotine (p<0.001). The increase in dopamine overflow in the Nac shell induced by acute nicotine (0.4 mg/kg s.c.) in rats pretreated with MEP 5 mg/kg i.p. did not significantly reduce the lever-pushing response. Pretreatment with MEP 5 mg/kg i.p. injected 30 minutes before the acute injection of nicotine reduced nicotine-induced stimulation of dopamine transmission in the Nac shell (p<0.01). Further, rats trained to lever-press to obtain palatable food, MEP 5 mg/kg i.p. did not significantly reduce the lever-pushing response. The present finding suggests that blockade of mGlu5 receptors attenuates nicotine self-administration and reduces the increase of dopamine transmission in the Nac shell mediated by nicotine, but does not inhibit responding for a palatable food reward. Together the results suggest that MEP is specifically acting on the neurobiological mechanisms underlying the rewarding properties of nicotine that may lead to nicotine dependence.

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POS4-71  NICOTINE-METABOLIZING CYPIB1/2 AND ETHANOL-METABOLIZING CYPIE1 ARE DIFFERENTIALLY REGULATED IN RATS TREATED WITH NICOTINE WHILE VOLUNTARILY CONSUMING ETHANOL

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Nicotine and alcohol are frequently co-abused and used. Alcoholism is more prevalent in smokers, and non-smokers consume twice as much alcohol as non-smokers. The mechanism by which smoking and alcohol use increase each other’s consumption is not known, but metabolic cross-tolerance may be a contributing factor. Here we investigate the influence of nicotine on voluntary ethanol intake and, for the first time, the impact of these two drugs together on rat hepatic ethanol-metabolizing CYPIE1 and nicotine-metabolizing CYPIB1/2 levels. We hypothesize that both ethanol and nicotine will induce hepatic CYPIE1, and that ethanol consumption, but not nicotine treatment, will induce hepatic CYPIB1/2. Haptic CYPIB1/2 may be even higher in rats treated with nicotine and continuing ethanol if the ethanol consumption is elevated by the nicotine treatment. Rats were treated with nicotine (0.4, 0.8 or 1.2 mg/kg/day in saline), s.c. for 10 days; half of the rats (previously trained to consume ethanol) were also allowed to consume 0.6% v/v ethanol for one hour daily 30 minutes after nicotine treatment. Hepatic CYPIE1 and CYPIB1/2 proteins were assessed by immunoblotting. Nicotine treatment increased ethanol consumption (x1.4-2.0; p<0.05). CYPIE1 was increased by nicotine treatment alone (x1.4-2.0; p<0.01). CYPIE1 was also higher in rats that consumed ethanol alone (x1.8; p<0.06), and these levels were increased by nicotine pretreatment (x1.8-2.4; p<0.05, relative to ethanol alone). CYPIE1 was unchanged by nicotine treatment alone as expected, but was increased by ethanol consumption (x2.2-2.5; p<0.05). Levels of ethanol intake were correlated significantly with CYPIE1 (r=0.67, p<0.001) and with CYPIB1/2 (r=0.49, p<0.01) protein levels. These hepatic enzymes are regulat ed not only directly by nicotine and ethanol, but also indirectly by nicotine through its effect of increasing ethanol intake. This may contribute to the co-use of these drugs, and also to altered CYPIE1- and CYPIB1/2-mediated metabolism of cis-di nal drugs, toxins, precarcinogens and endogenous substrates.

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POS4-74  EFFECTS OF MENTHOL ON BUPROPION PHARMACOKINETICS
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More African American users smoke mentholated cigarettes (~80%) compared to European Americans (~20%). Smoking cessation rates are lower among African Americans and mentholated cigarettes may be a contributory factor. Our research group has shown that smoking mentholated tobacco cigarettes attenuates the efficiency of bupropion for smoking cessation among African Americans. One possible mecha


POS4-76  ASSOCIATION OF GENETIC POLYMORPHISMS WITH RETROSPECTIVE RATINGs OF EARLY SMOKING EXPENSIVES IN ADULT NONSMOKERS
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This study explored associations of functional polymorphisms in genes in the dopamine and serotonin systems and in the mu opioid receptor gene with responses on the retrospective Early Smoking Experience (ESE) questions of initial sensitivity to effects of cigarette smoking. We studied young adult nonsmokers (N = 49) of European descent aged 21-40 with modest lifetime smoking experience (> 0 but < 10 lifetime uses) to focus on initial sensitivity ratings unbiased by subsequent smoking history. Because of the skewed responses to the ESE, we grouped those responses into “any” versus “none” categories. For the serotonin transporter (SLC6A4) gene promoter VNTR, or SHTTLPF, presence of the short allele was associated with higher likelihood of reporting having experienced any “Relaxation”, X2 = 4.15, p = .04, phi = .30, and any “Pleasant Sensations”, X2 = 5.75, p = .02, phi = .35, during initial smoking. For the dopamine transporter (SLC6A3) gene VNTR, presence of the 9-allele was also associated with reporting having experienced any “Relaxation”, X2 = 5.41, p = .02, phi = .35, and “Pleasant Sensations”, X2 = 5.28, p = .02, phi = .34. For the dopamine D4 receptor (DRD4) gene VNTR, individuals with at least one DRD7 7-repetitive allele were less likely to report having experienced any “Unpleasantness”, X2 = 4.72, p = .03, phi = -.32, and marginally more likely to report having experienced any “Relaxation”, X2 = 3.41, p = .07, phi = .28. No significant associations were seen for the DRD2/ANKK1 Taq1A polymorphism or the mu opioid receptor A118G SNP (OPRM1). Although limiting the sample size, these results suggest that genetic variants relevant to catecholamine function are associated with one’s initial sensitivity to smoking, perhaps helping to explain why some go on to become regular smokers and others do not.

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POS4-75  WATERPIPE TOBACCO SMOKING AND CIGARETTE SMOKING: A DIRECT COMPARISON OF TOXICANT EXPOSURE
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Tobacco smoking with a waterpipe (hookah) has spread worldwide. Many waterpipe smokers believe that, relative to cigarettes, waterpipes expose them to lower levels of smoke toxicants. Unfortunately, waterpipe and cigarette toxicant exposure has never been compared directly as we do in this laboratory study. Twenty-two participants (mean age = 21.4 years, SD = 2.4) reporting monthly waterpipe smoking (mean = 7.7 uses/month, SD = 11.3) and weekly cigarette smoking (mean = 10.8 cigarettes/day, SD = 8.6) completed two counterbalanced 45-minute sessions in which they smoked ad libitum their preferred brand/flavor of waterpipe tobacco or one tobacco cigarette. Outcomes included expired air carbon monoxide (CO) 5 minutes after session’s end and blood carboxyhemoglobin (COHb), plasma nicotine, and puff topography during smoking. Expired air CO increased, on average, by 26.8 ppm for waterpipe (SD = 20.7) and 2.6 ppm for cigarette (SD = 1.7) while peak COHb levels during waterpipe smoking (mean = 4.3%, SD = 2.75) were three times those observed during cigarette smoking (mean = 1.3%, SD = 0.57; P < .05). Peak nicotine levels did not differ (mean mg/ml waterpipe = 11.1, SD = 7.5; cigarette = 10.0, SD = 6.5). Mean total puff volume was 50 liters for waterpipe, on average, as compared to 1.2 liters for cigarette (P < .05). Relative to a cigarette, a waterpipe tobacco smoking episode is associated with greater CO exposure, similar nicotine exposure, and dramatically more smoke volume. This information may help address myths regarding the toxicant exposure associated with waterpipe tobacco smoking.

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POS4-77  SWITCHING FROM USUAL BRAND CIGARETTES TO A TOBACCO HEATING CIGARETTE OR SNUS – A MULTI-CENTER EVALUATION OF BIOMARKERS OF EXPOSURE AND HARM

A randomized, multi-center, 4-group study was conducted in subjects who smoke (n=131) and were switched to a Tobacco Heating (TH) cigarette, Snus or a Tobacco Burning (TB) cigarette (5 mg FTC tar*), with a non-treatment group of never-smokers (NS) (n=32). Clinical confinement and biomarker evaluation was conducted in smokers at baseline, 12 and 24 weeks and in NS at baseline only. Samples for 24-h urine and blood were collected and analyzed for tobacco-relat ed biomarkers. Urinary biomarkers included those for total nicotine (NicEq), NNK, benzo[a]pyrene, benzo(a)pyrene, 1,3-butanediine, acrylamide, polyacryl ic hydrocarbons (PAH), aromatic amines (AA), and uridine mutagenicity (UM) (among others). Blood biomarkers included carboxyhemoglobin (COHb), 4-amino benzy1phenyl-Hb adducts (4-ABP-Hb), C-reactive protein (CRP), sICAM-1, fibrinogen, homocysteine, platelets, Streptococcus spp (SCE) in peripheral lymphocytes and circulating endothelial precursor (CEP) cells (among others). Smokers on usual brand (UB) at baseline constituted the intention to treat (ITT) sample. Usage of study product and other tobacco/nicotine forms was tracked daily via telephone diary and compliance was computed. Mean compliance > 50% in week 24 defined the per protocol (PP) sample (n=88; with dual use noted particularly in the Snus group). For all urinary biomarkers listed, mean values (mass/24-h) in ITT smokers exceeded (p<0.05) those in NS except for CRP, fibrinogen, platelets and CEP cells (these are not discussed further). Among matched PP subjects at week 24 (vs. UB baseline), the following significant differences were noted. In urine, THcUB for NicEq, NNK, AA, PAH (4 of 6), acrylamide, butadiene, croto ndehyde, benzene, UM and in blood for COHb and 4-ABP-Hb and sICAM-1. THcUB only for acrolein in urine. In urine, SnuscUB for NNK, AA, PAH (4 of 6), acrylamide, buta diene, crotonaldehyde, acrylonitrile, benzene, UM and in blood for CEP1. Switching from UB cigarettes to TH cigarettes or Snus (even non-exclusively) significantly reduces exposure to several important tobacco toxins. R.J. Reynolds Tobacco Co.

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POS4-78 APPLICATION OF URINE COTININE TO NNAL RATIO IN TOBACCO SMOKE EXPOSURE ASSESSMENT

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Objectives: Cotinine is the most widely used biomarker to distinguish active vs. passive smoking. However, there is an overlap in cotinine levels when comparing light or occasional smokers vs. heavily exposed passive smokers. Since tobacco-specific nitrosamine (TSNA) levels are enriched in second-hand smoke (SHS) and nicotine levels dissipate rapidly when SHS ages, we reasoned that SHS smoke would expose people to relatively more TSNA than nicotine compared to active smoking. Therefore, we reasoned that the ratio of urine of cotinine to the nitrosamine NNAL could be better way to discriminate active from passive smoking.

Methods: Cotinine and 4-(methyl nitrosamo)-1-(3-pyridyl)-1-butanol (NNAL) were measured in urine of 127 daily smokers, 58 non-daily smokers, 77 adults and 47 children exposed to SHS.

Results: Average cotinine:NNAL ratios were: 13.66±5.332 (SD) for daily-smokers, 6.40±5.785 for non-daily smokers, 1.360±1.370 for adults and 47±6.338 for children exposed to SHS, and 409±778 for persons non-exposed to SHS.

Supporting this hypothesis, we found a highly significant difference in cotinine:NNAL ratio between the SHS-exposed groups and the unexposed group (all p<0.01).

Correlations: Measurement of the urine cotinine:NNAL ratio appears to be a way to determine the source of tobacco smoke exposure. This ratio can discriminate active from passive smoking. In addition, presumably can to the lower life-time of NNAL vs. cotinine, the ratio is lower in occasional compared to daily smokers. Finally, the cotinine:NNAL ratio is lower in children vs. adults exposed to SHS, suggesting that children might be exposed to higher levels of TSNA’s in relation to nicotine compared to adults.

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POS4-79 DEVELOPMENT AND PRELIMINARY VALIDATION OF A MULTIDIMENSIONAL SELF-REPORT SCALE OF SMOKING AND EATING CONCERNS: THE SEI-16

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Many smokers believe that smoking helps them to control their weight, and concerns about weight gain may interfere with smoking cessation. As researchers typically assess general weight concerns, a more specific measure is needed. The Smoking and Eating Inventory-16 (SEI-16) was created using four content domains: Hunger (smoking to suppress appetite), Craving (smoking to satisfy craving when not hungry), Overeating (smoking to prevent overeating), and Body Image (smoking when concerned with weight). Female undergraduates (N=283, including 59 smokers) completed the SEI-16, Fagerstrom Test for Nicotine Dependence (FTND), Smoking Stages of Change, Smoking Consequences Questionnaire (SCQ), a single item of postcessation weight gain concerns, Eating Attitudes Test (EAT-26), Bulimia Test-Revised (BULT-R), and Body Shape Questionnaire (BSQ).

Expired carbon monoxide (CO) levels, height and weight were measured. Cronbach’s alpha indicated excellent internal consistency (Total: α=95, Hunger: α=.85, Craving: α=.83, Overeating: α=.88, Body Image: α=.89). The SEI-16 demonstrated strong convergent and incremental validity. The SEI-16 correlated positively with SCQ Weight Concern (r=.67, p<.001) and concern about cessation-related weight gain (r=.63, p<.001). SEI-16 scores were positively related to frequency of smoking, FTND, number of past quit attempts, EAT-26, BULT-R, and BSQ (p<.05). Participants with higher SEI-16 scores had marginally higher CO levels (p<.10). As SEI-16 scores correlated positively with BMI, partial correlations between SEI-16 scores and variables of interest were conducted, controlling for BMI. SEI-16 scores were no longer related to smoking frequency, FTND, number of past quit attempts, or CO level. Relationships between SEI-16, postcessation weight concern, and eating pathology remained significant (p<.05). Thus, much of the relationship between smoking-related weight concern and smoking behavior may be explained by BMI. Perhaps individuals with a higher BMI feel greater need to rely on smoking for weight control, leading to higher dependency on nicotine. The SEI-16 appears to be a reliable and valid measure of smoking and eating concerns.

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POS4-80 ELECTRODERMAL DIMENSIONAL COMPLEXITY AND SMOKING

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In the present study EDA was assessed in 31 smokers (mean age 23.4, SD=1.4) and 41 nonsmokers (mean age 23.2, SD=1.8) during resting conditions. Calculation of dimensional complexity in both groups similarly as in previous reported studies was performed using algorithm for pointwise correlation dimension (PD2). Results of non-parametric statistical analysis of EDA records indicate increased complexity during rest conditions (indexed by PD2) in smokers compared to nonsmokers (Mann-Whitney test: p < 0.01) even though EDA measurement does not discriminate the groups (Mann-Whitney test: p > 0.05). These results present first supportive evidence that EDA complexity may present an electrophysiological marker that potentially could explain a role of complex dynamics in autonomic nervous system related to smoking habits and addiction.

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POS4-81 PATTERNS AND PREDICTORS OF TOBACCO USE IN EARLY PSYCHOSIS PATIENTS AND CONTROLS

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Psychosis is a severe disorder affecting more than 3% of the population. Across different countries and cultures, smoking has been found to be highly prevalent in this disorder, especially in comparison to the general population. However, little research has examined how individuals with psychosis use tobacco, as well as their motives for use, in direct comparison to smoking controls without psychosis. In the present study a modified Addiction Severity Index, the Fagerstrom Test for Nicotine Dependence, the Time Line Follow Back method, and the Reasons for Smoking Scale (RFS) were used to assess early psychosis patients’ patterns of current and lifetime tobacco use, and their motives for smoking, in comparison to age- and gender-matched controls without psychosis. Smokers with psychosis smoked more cigarettes per day (t(14)=-3.66, p<0.01) and were less likely to use tobacco with other substances, like cannabis or alcohol (t(14)=-2.41, p<0.05) than control smokers. Smokers with psychosis also reported greater Fagerstrom tobacco dependence levels (t(14)=3.50, p<0.01) than controls, and, in regression analyses, patient status predicted tobacco dependence levels and other above variables (e.g., previous substance use; R squared change=34, p<0.05). Smokers with psychosis also scored significantly higher on the Addiction/Craving scale of the RFS than current control smokers (t(16)=-2.41, p<0.01). Differences between these two groups were found on the Negative Affect Reduction, Stimulation, Sensorimotor Manipulation, Pleasurable Relaxation, or Habitual scales of the RFS. Results provide insight into how patients with psychosis use tobacco and how to tailor cessation programs to better serve this population.

The above research was conducted at Dalhousie University and the Nova Scotia Early Psychosis Program in Halifax, NS, Canada. Funds for the above research project were granted by the Dalhousie University Department of Psychiatry “Research Fund and Canadian Tobacco Control Research Initiative Interdisciplinary Capacity Enhancement grant. Heather Fulton has received graduate scholarship funding during her work on the above project from the Killam Trusts, the Natural Sciences and Engineering Research Council of Canada and the Canadian Institutes of Health Research.

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POS 84-2

THE CIGARETTE PURCHASE TASK: VALIDATING A MEASURE OF THE RELATIVE REINFORCING EFFICACY OF SMOKING IN ADOLESCENTS

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The Cigarette Purchase Task (CPT) is a self-report measure of hypothetical cigarette purchases as a function of escalating prices. This behavioral economic measure is an analogue of a progressive ratio operant schedule. CPT responses can be modeled as a smoking demand curve from which various indices of relative reinforcing efficacy (RRE) of smoking can be derived. The aim of this study was to examine the validity of the CPT in adolescent smokers by measuring the relationship between CPT variables and baseline smoking (mean cigarettes per day), nicotine dependence (modified Fagerstrom Tolerance Questionnaire), motivation to change smoking (Ladder score), and household income levels. Participants were 138 adolescents reporting any smoking in the past 2 weeks (M age=16.5 yrs; 51% male; M=5.97 cigs/day). Results supported the validity of the CPT. Significant positive relationships were found between baseline smoking and: breakpoint (the price at which consumption drops to zero, r=.21); intensity (consumption when the price is zero, r=.33); and maximum expenditure for cigarettes (r=.34). Depression was also significantly related to these variables (r=-.17, .27, .31 respectively). Motivation to change showed a significant inverse relationship with intensity (r=-.24), and expenditures (r=-.16). Dependent smokers showed decreased because of RRE and nicotine dependence. The CPT may be useful in identifying specific effectiveness of smoking cessation interventions.

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POS 84-3

VARENICLINE EFFECTS ON BRAIN ACTIVITY IN ABSTINENCE: A PILOT BOLD fMRI STUDY

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Our recent study identified novel mechanisms for varenicline’s efficacy, including a reduction in abstinence-induced cognitive deficits and negative affect (Patternson et al., Biol Psych, 2009). The current study explored potential brain mechanisms for these beneficial effects. Twenty-five treatment-seeking smokers participated in a within-subject, double-blind crossover study, including two 13-day medication periods (varenicline vs. placebo, counterbalanced). On day 3 of a mandatory abstinence phase in each medication period, an fMRI scan was completed while subjects performed neurocognitive tasks probing working memory and emotional processing (N-Back and Face Emotion Identification Task). Varenicline, compared to placebo, increased BOLD signal in the right dorsolateral prefrontal cortex (r=.032), with a corresponding improvement in performance on the N-back task (p=.08). During the emotional processing task, varenicline (compared to placebo) decreased activation in the right amygdala (p =.002), with a corresponding improvement in performance (p =.006). This study provides initial evidence for novel brain-behavior mechanisms of varenicline’s effects during smoking abstinence. Future studies can provide a more comprehensive assessment of the neural substrates for varenicline effects and explain the relationship of brain activity changes to smoking cessation.

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POS 84-4

EFFECT OF DENICOTINIZED CIGARETTES ON WORKING MEMORY AND BRAIN ACTIVATION DURING WITHDRAWAL


This study models the process of quitting cigarette smoking and subsequently relapsing, and examines the effect of denicotinized cigarettes on withdrawal-related changes in physiological and subjective measures, cognitive processes, and brain activation. Male right-handed smokers (N=30) performed baseline measures then were randomized into 3 groups: 1) smoking nicotine-containing cigarettes, 2) smoking denicotinized cigarettes or 3) tobacco abstinent. Compliance was monitored via expired air CO and urine cotinine levels. Subjective and cognitive measures were assessed daily for 8 days. Subjects had fMRI scans 24 hrs, 48 hrs, and 96 hrs following randomization while performing the n-back task consisting of six 4A12A runs in a randomized block design. On the 8th day they returned to smoking and all measures were repeated 2 days later. N-back accuracy for all groups declined with task difficulty. The abstinent group had significantly slower response times in the n-back condition compared to the Nic and Denic groups, which did not differ. Abstinent smokers reported elevated withdrawal and tobacco craving symptoms throughout the experimental phase. FMRI data were analyzed by 3 way ANOVA (group x session x back). Increased activation with task difficulty was noted in regions typically associated with working memory (lateral prefrontal and cingulate cortices, parietal lobule). We then examined grp x sex effects within these regions. In left DLPFC and precuneus, Denic and abstinent smokers showed decreased activation compared to Nics early in withdrawal, which normalized later in the withdrawal phase. In limbic regions (insula, posterior cingulate) deprived smokers again shown opposite activation patterns to the Nic group evident 48 hrs after deprivation and throughout the withdrawal phase. Denic group showed increased DLPFC activation. Nucleating the RRE associated with cigarettes of varied dosages, as well as potential reduced exposure products, under varying conditions (e.g., mood states; abstinence). The CPT may also be a useful instrument for evaluating effects of pharmacotherapies on RRE of smoking.

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POS 84-5

FMRI RESPONSE TO NEGATIVE EMOTIONAL IMAGES AMONG SMOKERS IN WITHDRAWAL

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Emotional factors are known to contribute to acquisition, maintenance, and severity of addiction. Negative emotion is frequently reported among smokers in nicotine withdrawal and is a known antecedent of relapse. Subjective reports of emotional experience while smoking are susceptible to response bias. Functional magnetic resonance imaging (fMRI) offers a more direct and potentially more sensitive method to understand the neural mechanisms of withdrawal. Nine 15-hour abstinent right-handed cigarette smokers (> 8 cigarettes/day; 7 female, mean age=34.3) viewed neutral, negative, and positive images from the International Affective Picture System during fMRI. Each condition included 28 images presented in two blocks at a rate of 3 seconds each and two 28-second resting baseline blocks. Task-related activity was quantified individually using voxel-wise multiple regression. Task-related effects were averaged in each region of each participant for use as the dependent variable in tests of hypotheses. Hypothesis testing was conducted in regions of interest defined by significant (p<.005) task-related activity compared to the resting baseline. The paradigm elicited changes in brain activity 48 hrs after deprivation and throughout the withdrawal phase. Brain activity was noted in regions associated with visual processing, attention, and emotion. These regions were further examined for specific effects of negative emotion and relationships between this response and smoking severity as measured by cigarettes smoked day. Two of these regions demonstrated a significant positive correlation between the response to negative emotional stimuli and smoking severity. These included areas comprising a large cortical fronto-parietal attentional network (r=.72, p<.05), including the caudate and thalamus. Findings suggest that in smokers experiencing withdrawal greater smoking severity is associated with a greater brain response to negatively valenced stimuli. The largest region of increased activity was located in left fronto-parietal regions previously associated with attention. These fMRI findings provide a direct evaluation of functional emotional processing in nicotine withdrawal and suggest an important role for attention.

NCI SPO5CA84719-100002 (Niaura, RS) IMRI Study of Nicotine Exposure in Discordant Sib-Pairs.

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POS4-86 INTERACTIVE EFFECTS OF NICOTINE AND ALCOHOL ON SUBJECTIVE AND PHYSIOLOGICAL AROUSAL TO GAMBLING

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The addictive behaviors of smoking, drinking, and gambling frequently occur simultaneously. In this study, we examined the unique and combined effects of alcohol and nicotine on the likelihood of smoking and drinking and found moderate relationships between smoking and drinking. We also found that the combination of alcohol and nicotine together lead to the greatest increases in subjective excitation and heart rate increase – a putative marker for sensitivity to reward. We hypothesized that the combination of alcohol and nicotine together would lead to the greatest increases in subjective excitation and excitement, and to the greatest heart rate increases, while participants gambled. Participants were 9 regular gamblers who were also drinkers and smokers. All were tested in four randomized counterbalanced conditions on separate days: alcohol/nicotine; alcohol/placebo cigarettes; placebo beverage/nicotine; and placebo beverage/placebo cigarettes. Participants were given $40 per session to play a commercially available spinning reels game on a video lottery terminal (VLT). After a pre-drinking baseline heart rate measure was taken, participants were given their beverage to consume and a second heart rate measure was taken. During the drinking and absorption phase, participants were given a cigarette to smoke. A third heart rate measure was taken while participants smoked. Then, participants played the VLT for 15 minutes while a fourth heart rate reading was taken. Participants then smoked another cigarette while they continued to gamble for another 15 minutes as their heart rate was measured. Self-reports of subjective excitation and stimulation were taken at baseline, post-drinking, post-smoking, and after 15 minutes of VLT play. Pharmacology condition x testing time repeated measures ANOVAs revealed significant two-way interactions for each of the three dependent measures. Greater subjective stimulation and excitement and greater physiological evidence of the rewarding effects of gambling on heart rate were observed when gamblers were given alcohol and nicotine together. Thus, the combination of alcohol and nicotine together led to greater reward for gamblers when gambling than either drug administered alone. This may help explain why these three addictive behaviors are frequently combined.

Nova Scotia Gaming Foundation.

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POS4-87 DOES SMOKING MODERATE THE RELATIONSHIP BETWEEN GENDER AND INDICATORS OF ALCOHOL CONSUMPTION AMONG COLLEGE STUDENTS?

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Smoking prevalence rates among U.S. college students (28%) are higher than rates among the general adult population (21%). College students also consume more alcohol than their non-college attending peers. Binge drinking poses a particularly significant problem among college students. Research suggests that gender plays an important role in both alcohol consumption and cigarette smoking patterns among adults. Smoking and alcohol use are strongly associated among college students, with many students claiming their smoking occurs solely within the context of alcohol consumption. Heavy drinking and cigarette smoking present significant health risks, and involvement in either behavior is associated with participation in other high-risk behaviors. Therefore, it is important to determine: (a) whether gender plays a significant role in smoking and drinking patterns among college students, as has been found with adult populations; and (b) does smoking moderate the relationship between alcohol consumption and drinking among college students? Participants were 262 college students. The sample was predominantly Caucasian (84%) and female (76%) with an average age of 20.5 (SD=2.2). Many of the students (n=164) reported at least social smoking (among these, 22 reported daily smoking). Multivariate analyses of variance (MANOVAs) indicated that compared to females, males reported significantly greater: a) total drinks per drinking day in the past 3 months; b) maximum quantity consumed in the past 3 months; c) binge drinking episodes per week; and d) hours drinking per maximum quantity drinking episode in the past 3 months. Gender did not significantly predict social smoking status, chi-square (1, N=262) = .16, ns. In hierarchical linear regression analyses, social smoking status moderated the effects of gender on total number of drinks consumed in the last 3 months (p < .05) and number of binge drinking episodes per week (p < .05), whereby smoking predicted heavier alcohol consumption patterns among males. These findings may inform intervention and prevention efforts with college student populations and high-risk behaviors.

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POS4-88 GENOME-WIDE ASSOCIATION STUDY OF SMOKING INITIATION AND PERSISTENCE

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Previous GWA studies to nicotine addiction and/or addiction vulnerability have listed the 20-50 most significant SNPs or genes while paying little attention to the remainder of the genes that might contribute to the trait. In the present study, we aim to identify a biologically meaningful network of genes involved in smoking initiation and persistence using a novel variant of a pathway-based approach. A genome-wide association study for smoking initiation and persistence was carried out in a Dutch sample (from the Netherlands Study of Depression and Anxiety and Netherlands Twin Register) that consisted of 3,497 subjects. We selected genes when one or more SNPs were associated with smoking initiation or smoking persistence. The selected genes were then examined in three independent replication samples (Leiden Study n=405, Rotterdam Study n=5810 and the GenoMEUtnin project n=1648). The proteins encoded by the replicated genes were visualized in a biologically meaningful network of functional groups, in which cellular location and direct interactions between proteins are shown using information from a manually curated expert database (Ingenuity Systems). Several interesting groups of genes including genes coding for glutamate receptors, tyrosine kinase receptors, transporters and cell adhesion molecules were found. The present study provides evidence that genes influencing smoking behavior tend to code for proteins that have similar biological functions. We conclude that a network-based GWA approach is useful to identify genes influencing smoking behavior and this approach could be useful for other phenotypes, too.

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POS4-88 GENOME-WIDE ASSOCIATION STUDY OF SMOKING INITIATION AND PERSISTENCE
EFFECT OF PYRIDINE VS. PYRIMIDINE RING STRUCTURE ON SELECTIVITY OF NICOTinic COMPOUNDS FOR SUBTYPES OF NICOTINIC ACETYLCHOLINE RECEPTORS

In an initial screen of a library of compounds with structures based on nicotine, we noticed that a pair of analogs that differed in ring structure (one a pyridine as for nicotine, and the other a pyrimidine) indicated that the pyrimidine analog had improved selectivity for alpha6beta2*-nAChRs as assayed for binding affinity in mouse brain membranes and functions in synaptosomes. The change from pyridine to pyrimidine decreased affinity for alpha3beta4* and alpha7-nAChRs ~10-fold while the change for alpha4beta2* and alpha5beta2*-nAChRs was minimal. This structural change also decreased potency for function for alpha3beta4* by almost 10-fold, but actually increased potency for alpha4beta2* and had minimal effect on alpha5beta2*. In addition, this change increased efficacy at alpha4beta2* and had a small decreasing effect on alpha3beta4*-nAChRs. To test whether this structural change from pyridine to pyrimidine would have similar effects on binding and function for other nicotinic compounds, five more pairs of compounds were synthesized and assayed for functional potency and efficacy. These compounds all retained the basic pharmacophores of nicotine (cationic center, hydrogen bond acceptor, and aromatic ring) with changes in the pyrrolidine ring structure and/or in the spacing between the rings. Change from a pyridine to a pyrimidine had the following effects on binding affinity: 1) significant decreases in affinity for alpha7 for all 6 pairs, 2) significant decreases in affinity for alpha3beta4* for 5 out of 6 pairs, 3) little effect on affinity for alpha4beta2* for 4 of 6 pairs with a decrease for 1 pair and an increase for 1 pair, and 4) small to moderate decreases in affinity for 5 of 6 pairs for alpha4beta2* with an increase for 1 pair. Potency shifted in favor of alpha5beta2*-selectivity compared to alpha3beta4* for 5 of 6 pairs (1 compound had activity at alpha5beta2* too minimal for comparison) and compared to alpha4beta2* for 4 of those 5 pairs. Efficacy changes were variable. Overall, pyrimidine compounds were more selective for the alpha6beta2*-subtypes compared to other subtypes of nAChRs.

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POS5-1  MONAMINE OXIDASE ACTIVITIES IN PREGNANT SMOKERS AND IN THEIR NEWBORNS

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Background: Several studies have shown that tobacco smoking is associated with reduced monoamine oxidase (MAO) A and B activities but no study assessed MAO activities in smoking pregnant women. In animals, gestational MAO inhibition leads to aggressive pup behaviour in humans, to inconstancy in newborns (NB). Smoking induced low MAO activities in pregnancy may have negative perinatal consequences.

Aims: To compare MAOA and MAOB activities in smoking (SPW) and non-smoking pregnant women (NSPW) and in the cord blood and assess the NB behaviour during the first 48 h of life.

Participants and Methods: 30 SPW and 29 lifetime NSPW were included during the 2nd trimester of pregnancy. Vital signs, birth characteristics, platelet MAOB activity, plasma MAOA markers (MAOA dependent metabolites: of norepinephrine: dihydroxyphenylglycol; of dopamine: homovanillic and dihydroxyphenylacetic acid; of serotonin: 5-hydroxy-indolacetic acid) and plasma cotinine were measured at the end of the 2nd trimester, at delivery and in the cord blood. The NB discomfort (face, body, sleep quality, relation, comfort need) was evaluated every 8 hours by a standardized, widely used questionnaire.

Results: The SPW smoked on average 73 cig./wk end of 2nd trimester and 80 cig./wk at delivery. Mean plasma cotinine was 84, 105 and 95 ng/ml at the end of the 2nd trimester, at delivery and in the cord blood. The NB discomfort was significantly lower than those of NB of NSPW. Plasma markers of MAOA activity were significantly lower in SPW than in NSPW and in the cord blood of NB of SPW than in the cord blood of NB of NSPW. Platelet MAOB determinations are ongoing. NB of SPW showed more facial discomfort (time by maternal smoking status interaction p=0.02) and were less relaxed (p=0.07) than NB of non-smoking mothers.

Conclusion: Smoking leads to MAOA inhibition in pregnant women and in the NB of SPW (as measured in cord blood). NB of SPW may show discomfort during the first 48h of life.

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POS5-2  INTENSIVE INTERVENTION FOR SMOKERS IN ALCOHOL TREATMENT: PARTICIPANT CHARACTERISTICS

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The prevalence of cigarette smoking in alcohol-dependent individuals is quite high and the cessation rate low. This poster presents the baseline characteristics of participants enrolled in a clinical trial aimed at determining the efficacy of an intensive smoking cessation intervention versus usual care in alcohol-dependent smokers in early recovery. Participants were recruited at a VA drug and alcohol treatment program. The sample consists of 162 military veterans, with 48% identifying as Caucasian and 37% identifying as African-American. The mean age = 50 years. Marital status is predominantly single (90.7%), and 60.5% of the sample have a high school education or less. 80.9% are unemployed and 83.3% have an annual income < $21,000. 43.2% live in half way house/therapeutic communities and 25.9% are homeless. Mean daily cigarettes = 16.8; mean number of previous quit attempts = 5.1; and mean FTND score = 4.1. The majority of participants report a strong desire to quit smoking, with 67.5% endorsing a goal of complete abstinence. 76% are in the preparation stage of quitting smoking and 20% in the contemplation stage. Their desire to quit smoking is as strong as their desire to quit drinking, but they anticipate that quitting smoking will be more difficult than quitting drinking (6.4 versus 5.4 on 10-point scale). They expect smoking to have less of an impact on the urge to drink than drinking has on the urge to smoke (2.6 versus 4.3 on 5-point scale, p<.001). Mean BDI score = 14.1, and mean POMS Total Mood Disturbance score = 44.8. Diagnostic interviewing indicates that 53 participants (32.7% of the sample) meet criteria for lifetime major depressive disorder (recurring or single episode) and 26 participants (16%) meet criteria for lifetime bipolar disorder. Over one-half of the participants meet criteria for lifetime co-morbidity psychiatric and substance use disorders needs to be considered in providing treatment for tobacco addiction in alcohol-dependent smokers.

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POS5-3  ETHNO-SPECIFIC PATTERNS OF TOBACCO USE AMONG CANADIANS: ASSESSING THE MEDIATING IMPACT OF ACTIVE CULTURAL RETENTION, STRESS, AND EXPERIENCES OF DISCRIMINATION

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Description and Objectives: A principal source of disparity in health across ethnic groups is tobacco use. The U.S. Department of Health and Human Services notes that tobacco use is a leading cause of death and disease in ethnic populations across North America, and the relationship between ethnicity and tobacco use is an important public health issue. A substantial body of research has emerged over the last 15 years exploring tobacco use within specific ethnic communities. Two general findings from this research are that: (1) Ethnic group members consume tobacco at differing rates relative to members of the host culture, and (2) Tobacco use varies considerably among members of different ethnic groups. However, we know considerably less about the processes that help to explain the divergent patterns in tobacco use exhibited by ethnic individuals. Two key processes affecting tobacco use among ethnic individuals require further attention: (1) how cultural retention shapes health behaviors for particular ethnic groups; and (2) how the lived experiences of being an ethnic individual might play a role (i.e., stress, discrimination). Examining these processes is the primary objective of this study.

Methods: Data will be drawn from the 2005 Canadian Community Health Survey, version 3.1. A cross sectional survey of 130,000 individuals. Primary ethnic identity is based on individuals' self-identification of their ethnic heritage. Tobacco use measures include smoking prevalence, smoking status (i.e., regular, occasional), nicotine dependence, and exposure to second-hand smoke. Mediator measures include active cultural retention (i.e., language use) and the lived experiences of being an ethnic individual (i.e. discrimination, stress).

Results: The results will broaden our understanding of tobacco use patterns among Canadians from varying ethnic origins. This will assist in the development of tobacco control strategies by highlighting ethnic groups at a particular high risk, as well as informing about potential "cultural" protective mechanisms available to certain ethnic groups.

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POS5-4 QUIT, CUT, SWITCH, OR ROLL: HOW THAI SMOKERS COMPENSATE FOR CIGARETTE PRICE INCREASES

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In addition to quitting and cutting consumption, smokers faced with higher cigare-
tette prices may compensate in several ways. This study examines three such compensatory behaviors among adult male smokers in Thailand: switching to a lower-priced brand, switching from buying packs to buying cigarettes by the stick, and switching from factory-manufactured cigarettes to roll-your-own (RYO) tobacco. These actions have the potential to dilute the impact of cigarette tax policy on tobacco use. Using two panels of micro-level, longitudinal data collected in 2005 and 2006, we use a discrete choice framework to estimate the effects of an excise tax increase implemented throughout Thailand in December 2005. The results indicate that, controlling for socio-demographic and environmental variables, quitting and switching behavior are highly sensitive to changes in the price of cigarettes, but so are brand-switching, stick-buying, and use of RYO tobacco. Estimates of the marginal effects and price elasticities for each behavior are calculated. Policymakers in Thailand and elsewhere should recognize these unintended consequences of cigarette tax increases and implement policies to mitigate their adverse impact.

The data collection was funded by grants from the US National Cancer Institute/NIH (from the Roswell Park Transdisciplinary Tobacco Use Research Center 250 CA111236, and from R01 CA100382), the Canadian Institutes for Health Research, the Australian National Health and Medical Research Council, the Australian Commonwealth Department of Health and Aging, Cancer Research UK, the Center for Behavioral Research and Program Evaluation of the National Cancer Institute of Canada/Canadian Cancer Society, and the Canadian Tobacco Control Research Initiative.

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POS5-5 THE BIG-FIVE INVENTORY: PROFILES OF PERSONALITY TRAITS OF CHINESE SMOKERS ATTENDING A SMOKING CESSATION CLINIC IN HONG KONG

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Background: Research suggests some personality traits may be relevant to engagement in smoking. Extraversion and neuroticism may be important risk factors of smoking initiation among adolescents, and smokers tend to score significantly higher than non-smokers in these two traits. We aimed to assess the psychometric properties of the 44-item Big Five Inventory (BFI) among Chinese smokers.

Methods: All 1,173 Chinese smokers who had attended the first smoking cessation clinic in Hong Kong from 21 Aug 2000 to Jan 2002 to receive stage-matched compensatory behaviors among adult male smokers in Thailand: switching to a lower-priced brand, switching from buying packs to buying cigarettes by the stick, and switching from factory-manufactured cigarettes to roll-your-own (RYO) tobacco. These actions have the potential to dilute the impact of cigarette tax policy on tobacco use. Using two panels of micro-level, longitudinal data collected in 2005 and 2006, we use a discrete choice framework to estimate the effects of an excise tax increase implemented throughout Thailand in December 2005. The results indicate that, controlling for socio-demographic and environmental variables, quitting and switching behavior are highly sensitive to changes in the price of cigarettes, but so are brand-switching, stick-buying, and use of RYO tobacco. Estimates of the marginal effects and price elasticities for each behavior are calculated. Policymakers in Thailand and elsewhere should recognize these unintended consequences of cigarette tax increases and implement policies to mitigate their adverse impact.

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POS5-6 DEVELOPMENT AND STANDARDIZATION OF KIM’S SMOKING CESSATION MOTIVATION SCALE AND ITS PREDICTIVE IMPLICATIONS FOR SMOKING CESSATION

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Objective: The purpose of this study was to develop a scale to measure motiva-
tion for smoking cessation. Motivation is known to be important for success of smoking cessation. The reliability of the scale was assessed and its predictive validity for smoking cessation was evaluated.

Methods: We recruited 333 men aged 20 to 70 that visited smoking cessation clinics at seven public health centers that wanted to stop smoking. The demo-
ographic characteristics were recorded and the K-SOCRATES-S performed. A smoking cessation motivation scale was developed with 10 questions based on the theory of motivation enhancement therapy.

Results: The motivation scale was composed of four subscales based on the trait factors for each subscale. The inter-item and test-retest correlations were calculated. In addition, the newly developed scale had a high degree of validity based on its sig-
nificant correlation with the smoking version of SCORATES. Moreover, the pre-
contemplation level motivation was found to significantly predict the success of smoking cessation. And one of subscales of the K-NSSS, stereotype which also significantly predict the success of smoking cessation, significantly correlated with the preparation 1 and 2 level of motivation.

Conclusions: The smoking cessation motivation scale with 10 questions that was developed in this study was a highly reliable and a valid scale for the predic-
tion of success for smoking cessation for those who wanted to stop smoking. It explained well why participants with some smoking-related patterns such as a high level in stereotype stopped smoking with a high success rate.

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POS5-7 MOVIE SMOKING, MOVIE HURGER AND URGE TO SMOKE AMONG ADULT SMOKERS

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Objective: To explore the association between movie smoking, other movie con-
tent, and urge to smoke among adult smokers.

Methods: We conducted exit interviews with 4,073 movie patrons in Kiel, Germany, over a 4-week period, of whom 2,817 were 18 years or older. Some 585 were smokers, of whom 536 had complete data for all study variables. Subjects had exited 26 movies; 2 were horror films and 12 contained smoking. We used least squares regression to assess the association between exposure to movie smoking and urge to smoke (10 points scale based on the question, “How strong is your urge to smoke a cigarette now?”), controlling for movie rating, age, sex, heavy smoking index (HSI, range 0-6), and time since last cigarette (time).

Results: Median age was 27 years (interquartile range 21, 39), and 52% were female; 38% smoked less than half a pack per day and 13% smoked a pack or more per day. Median urge to smoke level at movie exit was 7 (qr 4, 10). In the multivariate analysis, an HSI score of 4 was associated with a 2.4-point increase in urge to smoke compared with 0. Presence of movie smoking was associated with a 0.80 point increase in craving (95%C.I. 0.45, 1.2), as were age, and time. In an exploratory multivariate analysis of movie-level effects, “The Strangers”, a horror film with smoking, seen by 26, had an association with craving similar to that of movie smoking (b = 0.85[95%C.I. 0.17, 1.5]). Conclusions: In this sample of adult smokers, exposure to movie smoking was associated with higher craving among smokers leaving the theater. The explorato-
y analysis suggests that horror content may also affect craving, perhaps through fear arousal, and may also interact with movie smoking to greatly heighten craving.

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POSS-5
RACIAL DIFFERENCES IN NICOTINE DEPENDENCE BETWEEN BLACK AND WHITE HEAVY SMOKERS

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To assess the racial difference in nicotine dependence (ND) measures between Black and White smokers, we compared 896 Black and 601 White smokers from a case-control genetic study sample on ND. Adult smokers were recruited who smoked > 5 years and > 20 cigarettes per day (CPD) for the last year. Black and White smokers were similar in age (Blacks: 43.3±11.8; Whites: 41.3±11.9) and body mass index (BMI; 28.1±4.5 vs. 27.7±8.5; kg/m²). Females accounted for about 45% for both samples. Blacks were more likely to be employed full-time (56% vs. 36%) but less likely to have post high-school education (20% vs. 31%). Although average number of cigarettes smoked per day (CPD) was similar between Blacks (28.1±6.8) and Whites (28.3±8.2), FTND score was significantly higher for Blacks (8.37±1.46 vs. 7.50±2.14; P<0.0001). Analyses of individual FTND items showed that all items were significantly different between the two samples. For example, 87.6% of Blacks and 69.4% of Whites smoked their first cigarettes within the first 5 minutes of awakening. Considering that the measure of time to first cigarette (TTFC) is suggested to be the best predictor of ND and relapse, we further investigated the racial difference in the likelihood of TTFC within 5 minutes after wake up and its relationship with CPD in the logistic regression, adjusting for age, gender, education level, and BMI. Our results revealed that compared with Whites, Black heavy smokers are 3 times as likely to smoke within the first 5 minutes (OR=3.01; 95% CI: (2.25, 4.62); P<0.0001). Across race, the odds of smoking within 5 minutes was increased by a factor of 3 for every additional 10 cigarettes smoked. In contrast, every 5 kg/m² increase in BMI reduces the likelihood of smoking within the first 5 minutes by 20%. Taken together, our findings suggest that significant differences exist between Black and White smokers, and these differences may underlie the racial difference in the genetic makeup of ND. We thus conclude that this sample represents a valuable resource for hunting susceptibility genes for ND, especially for Black smokers.

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POSS-9
KNOWLEDGE, ATTITUDES, AND PERCEIVED BARRIERS REGARDING IMPLEMENTATION OF FRAMEWORK CONVENTION ON TOBACCO CONTROL PROVISIONS AND TOBACCO CONTROL MEASURES AMONG REPRESENTATIVES OF LOCAL SELF-GOVERNMENT BODIES IN, KERALA, INDIA

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Background: The Indian state of Kerala has a very strong form of decentralized government. However, knowledge, attitudes and barriers regarding implementation of tobacco control among the representatives of the local self government bodies are not known. Objectives: To examine the knowledge, attitudes and perceived barriers regarding implementation of FCTC provisions among representatives of Local Self Government Bodies (LSGB) in Kerala.

Methods: We surveyed 596 LSGB representatives (mean age 44 years, women 40%), 496 in the southern district of Trivandrum and 460 in the northern district of Kannur district using a pre-tested and structured interview schedule.

Results: In our study 70% LSGB representatives felt that smoking is harmful to health. However, 23% perceived smoking between 1-4 cigarettes or bids to be not harmful to their health. One third of LSGB representatives were unaware of the WHO FCTC. Among knowledge statements 76% wanted to ban sale of tobacco products to and by minors, 73% wanted to ban sale of tobacco products within 100 metres of educational institutions. The principal barriers reported by LSGB representatives in implementing tobacco control policies including FCTC provisions were lack of administrative support (37%), lack of political will (18%), lack of financial and human resources (25%) and the fear of public opposition (28%). Most representatives suggested involving community members (74%), non-governmental organisations (73%), treying penalties (86%) and involving LSGB representatives (64%) to effectively enforce tobacco control policies. Overall, 33% (55 men and 1% women) had ever used some form of tobacco and 14.4% were current tobacco users (24 men and 0.8% women).

Conclusions: Knowledge of FCTC among LSGB representatives in Kerala was low. However, most of them expressed interest in tobacco control measures and suggested various methods for tobacco control in their local bodies.

IDRC Canada.

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POSS-10
INCIDENCE AND RELATIVE RISK OF NEW-ONSET SEIZURE DIAGNOSIS ASSOCIATED WITH VARENCLINE USE

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Objective: Ascertain the incidence of new-onset seizure diagnosis in patients treated with varenicline.

Background: Varenicline, an alpha4beta2 nicotinic receptor partial agonist, was approved in 2006 as an aid for smoking cessation. Although there is no known mechanism by which varenicline may induce seizures, and clinical trial data do not suggest increased risk for seizure activity compared to placebo, there have been post-marketing reports of seizures in varenicline users. Since prior smoking- cessation medications such as bupropion have been associated with an increased risk of seizures, we investigated whether varenicline use increases the risk of new-onset seizure diagnosis among members of US managed-care plans.

Methods: Patients who had pharmacy claims for varenicline between July 1, 2006 and December 31, 2007, were at least 18 years of age, were continuously enrolled for at least 360 days prior to and 1 day following the earliest prescription fill date were identified using the PharMetrics Database. Patients with a previous history of seizure disorder were excluded based on occurrence of 1 or more claims for a seizure disorder or treatment. Patients with potentially seizure-causing conditions (e.g., head trauma) or medication use (e.g., clozapine) were censored from the first such claim forward. The incidence of new-onset seizure diagnosis was determined for time periods before (PRE) and after (POST) start of varenicline therapy representing rates without and with varenicline use. Risk ratios of the incidence rates from PRE to POST time periods and 95% confidence intervals were assessed using Poisson regression methods.

Results: There were a total of 246,485 patients with at least 1 claim for varenicline in this database. After excluding criteria listed above, 112,914 patients were included in the PRE group and 102,422 in the POST group for analysis. The incidence rates for seizure diagnosis were 248 (PRE) and 210 (POST) per 100,000 person-years of follow-up. The relative risk for varenicline use was 0.84 (95% CI: 0.67, 1.06).

Conclusion: In this retrospective analysis, varenicline use did not increase the risk of new-onset seizure diagnosis.

Funding for this analysis was provided by Pfizer Inc.

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POSS-11
RUYAN NICOTINE ELECTRONIC INHALER/ E-CIGARETTE: BENCH-TOP TESTS

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Background: These flameless electronic devices, marketed as cigarette substitutes, claim to provide nicotine without smoke toxicants. Is this claim justified?

Aim: To assess the Ruyan e-inhaler and its mist for safety and dose. Method Multiple (50%) nicotine liquid, and headspace above liquid, tested in various (8) laboratories. Smoking machine (50 ml puff for 2 seconds every 30 seconds) compares puff chemistry of Ruyan 16 mg nicotine e-inhaler with 18 mg nicotine "mini-e-cigarette" inhaler. Propylene glycol and inhaled nicotine tested and safety reviewed. Results: Chemistry: Ruyan mist is 82% propylene glycol, 15% water, 1% free-based nicotine, and 2% particulates and flavours, formed without combustion. Cartridges labeled 16 mg nicotine, contained 13 mg. Per puff nicotine was 0.009 mg. (Minibrand 0.048 mg.) Toxicology and safety. Cigarette toxicants, including carbon monoxide were absent, or found in very low concentrations. Heavy metals were not detectable. Trace levels of tobacco specific nitrosamines were similar to the levels found in medicinal nicotine. Monoamine oxidase inhibitor, effect, found in tobacco smoke extract; absent.

Conclusions: Nicotine e-inhalers varied by per-puff nicotine, but delivered much less per puff than a regular cigarette. The inhaled mist has a safety profile akin to a medicinal nicotine inhaler. Personal use imports should be allowed until some brands qualify for retail sale, as cigarette substitute, medicinal inhaler, or electric cigarette. Ruyan(Holdings) Ltd. Being funded Health NZ to carry out the tests. British American Tobacco GRAD (UK) independently analysed the mist.

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POSS-12  EFFECTIVENESS OF DIFFERENT INTERVENTION STRATEGIES IN REDUCING TOBACCO-ATTRIBUTABLE MORBIDITY IN CANADA

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Background: Cigarette smoking is one of the most important risk factors for the burden of disease. Given the heavy load of tobacco-attributable social burden, tobacco control measures have gained more importance in Canada. The use of cost-effective tobacco control measures is the key to further reduce the burden of tobacco smoking. The aim of the present study was to simulate empirically proven interventions in the field of the tobacco prevention by comparing tobacco-attributable morbidity with respect to its effectiveness.

Methods: The impact of four intervention strategies aimed to reduce tobacco smoking, as based on the literature and selected by a committee of Canadian experts in Tobacco Control, was modelled. Prevalence of tobacco use was obtained from the latest Canadian Community Health Survey (2003). Available risk relations were combined to result in cost savings of about $37 million in Canada per year. The most effective intervention in terms of avoidable burden due to morbidity was nicotine replacement therapy ($11 million per year). Avoidable savings from smoking cessation interventions (60% of total savings), followed by individual behavioural counselling (more than $8 million per year, 22% of total savings) and increasing taxes (more than $6.5 million per year, 18% of total savings).

Conclusion: This study provides the evidence that suggests the implementation of proven effective population-based intervention and interventions focusing on individual behavioural change would reduce tobacco-attributable morbidity and its cost. This study can positively influence the decision making on tobacco control in Canada.

This study was supported by the Ontario Tobacco Research Unit (OTRU), Small Project Grants for Canadian Researchers.

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POSS-14  A LATENT CLASS ANALYSIS OF ADULT SMOKERS

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Identifying subgroups of smokers based on smoking behavior and withdrawal symptoms may have important implications for research in smoking cessation. To explore subgroups of smokers we conducted a latent class analysis (LCA) of the 2001-2002 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) data, a population-based study of adults in the United States. Individuals were considered smokers if they reported current use of tobacco, smoking in the past 12 months, and smoking every day (n=8213). Approximately half had a diagnosis of nicotine dependence in the last 12 months. Eighteen symptoms related to tobacco use (NESARC Section 3) were included in the LCA. An 8-class model best fit the data; the 8 classes varied both quantitatively and qualitatively. Class 5 (prevalence=21.0%, and Class 7 (prevalence=18.3%) were the most common classes affected. Class 7 reported no symptoms, while Class 5 had high probability of only two symptoms: smoking in the morning and smoking just after being in a situation were use was prohibited. In contrast, Classes 1 and 6 were the most affected and the least common (prevalence=6.5% and 7.4%, respectively). Class 6 had moderate to high probabilities for each included symptom while Class 1 had all symptoms except chain smoking. Symptoms related to tolerance (smoking more than usual, increasing smoking by <50%, smoking more than intended), and continuing to smoke despite feeling nervous/illtired/pressed. The remaining classes (prevalence 9.6% to 14.2%) varied in both number and extent of symptoms present; all four of these classes reported attempting to cut down, continuing to smoke despite health problems, and being unable to cut down. The eight classes also differed in demographic and clinical variables such as sex, age when started smoking, number of cigarettes smoked/day, Fagerstrom Test for nicotine dependence, and number of symptoms related to withdrawal.

This research was funded by GlaxoSmithKline. Drs. DeVeau-Geiss and Chilcoat are employees of GlaxoSmithKline.

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POSS-15  EFFECTIVENESS OF DIFFERENT INTERVENTION STRATEGIES IN REDUCING TOBACCO-ATTRIBUTABLE MORBIDITY IN CANADA

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Background: Cigarette smoking is one of the most important risk factors for the burden of disease. Given the heavy load of tobacco-attributable social burden, tobacco control measures have gained more importance in Canada. The use of cost-effective tobacco control measures is the key to further reduce the burden of tobacco smoking. The aim of the present study was to simulate empirically proven interventions in the field of the tobacco prevention by comparing tobacco-attributable morbidity with respect to its effectiveness.

Methods: The impact of four intervention strategies aimed to reduce tobacco smoking, as based on the literature and selected by a committee of Canadian experts in Tobacco Control, was modelled. Prevalence of tobacco use was obtained from the latest Canadian Community Health Survey (2003). Available risk relations were combined to result in cost savings of about $37 million in Canada per year. The most effective intervention in terms of avoidable burden due to morbidity was nicotine replacement therapy ($11 million per year). Avoidable savings from smoking cessation interventions (60% of total savings), followed by individual behavioural counselling (more than $8 million per year, 22% of total savings) and increasing taxes (more than $6.5 million per year, 18% of total savings).

Conclusion: This study provides the evidence that suggests the implementation of proven effective population-based intervention and interventions focusing on individual behavioural change would reduce tobacco-attributable morbidity and its cost. This study can positively influence the decision making on tobacco control in Canada.

This study was supported by the Ontario Tobacco Research Unit (OTRU), Small Project Grants for Canadian Researchers.

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POSS-16  A STUDY ON THE FACTORS AFFECTING SMOKING BEHAVIOUR DURING HOSPITALIZATION AMONG PATIENTS WITH CARDIOVASCULAR DISEASE (CVD) IN MAINLAND CHINA

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Background: China has the largest population of smokers in the world. Hospitalization in a smoke-free hospital is considered to be a unique opportunity for patients with a smoking-related illness, such as CVD, to quit smoking. This study aims to explore the factors affecting patients’ smoking behaviour during hospitalization in a smoke-free hospital in Mainland China.

Methods: A cross-sectional survey using a self-administered questionnaire was conducted in 4 medical wards and 5 surgical wards of a CVD hospital in Beijing, China from September to November 2008. All hospitalized patients who (1) smoked at least one cigarette within the 30 days prior to their admission; (2) hospitalized in cardiology medical or surgical wards; (3) had stayed in the hospital for at least 48 hours, and were to be discharged within 24 hours; (4) were 18 years of age or older; were invited to participate in the study.

Results: A total of 325 patients completed at least one fortnight of the questionnaires, with 26.2% (95%CI: 21.35%–30.96%) reported to continue smoking during their hospital stay.

Univariable regression analysis showed the following factors significantly associated with smoking during hospitalization: (1) before admission: higher daily cigarette consumption and higher nicotine dependence; (2) during hospitalization: shorter length of hospital stay and unawareness of the smoke-free hospital policy; (3) psychological factors: lower motivation in succeeding in future attempts, perceived more difficulties in quitting smoking, lower confidence in their abilities to quit smoking and lower self-efficacy in existing smoking. In the multivariable regression model, smoking during hospitalization was associated with the shorter length of hospital stay and lower confidence in their abilities to quit smoking.

Conclusion: This study was funded by The University of Hong Kong.

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POS5-17  REPURPOSING THE TASTE AND FLAVOR STUDY—DEVELOPING A PHASE 1B MODEL FOR PHARMACEUTICAL DEVELOPMENT OF NICOTINE ADDICTION TREATMENTS.

Andrea Chmitorz, Sabine Gradl*, and Christoph Kröger

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Objectives: In clinical trials, medication such as NRT, Bupropion or Varenicline showed to enhance the success of smoking cessation. Cross-sectional and longitudinal studies about the effectiveness of medication outside clinical trials reported inconsistent results and different findings. This study aims to examine the effect of nicotine replacement therapy on weight gain and whether there are gender-related differences in weight gain for smokers using medication outside clinical trials.

Methods: The study’s sample included 71 German adult smokers who attended a cognitive-behavioral smoking cessation program. Smokers using Bupropion or Varenicline as medication were examined. ANCOVA analyses were conducted to control for baseline imbalances of BMI at t0.

Results: No significant results were found for medication use and weight gain at t1 and t2. There were no significant differences in weight gain for men and women who did not use medication. Within the subgroup of medication users, no significant differences in weight gain were found between males (n=19) and females (n=47). (F= .887, p = .35) but there is a trend showing that women have a higher weight gain between t0 and t2.

Conclusion: Concerning weight gain women seem to benefit less from medication than men. An explanation for this might be the different metabolism of women regarding nicotine.

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POS5-19  DOES NICOTINE REPLACEMENT THERAPY HELP DELAYING WEIGHT GAIN AFTER QUITTING?

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Objectives: Findings show that smoking cessation is associated with weight gain and that weight gain is a primary reason for relapsing after a quit attempt has been made, especially for women. The use of medication may delay weight gain after quitting. The findings are mainly based on clinical trials. Little research has been done on that issue outside clinical trials. This study aims to examine the effects of medication on weight gain and whether there are gender-related differences in weight gain for smokers using medication outside clinical trials.

Methods: The study’s sample included 123 German adult smokers who attended a cognitive-behavioural smoking cessation programme. The programme informs about medication as a useful strategy for quitting, but its use is not enforced. Smokers using nicotine replacement therapy (NRT) were included in the study’s sample. Smokers using Bupropion or Varenicline as medication were excluded from the study. In a longitudinal non-randomized controlled study, n= 69 medication users (females= 38, males= 21) and n= 64 non-users (females= 45, males= 19) were investigated at three measurement times: at baseline in the first session (t0), at the end of the course (t1) and at 6-months follow-up (t2). Users and non-users of medication were matched by gender, age and level of nicotine dependence. Participants who relapsed after the quit day were excluded from the analyses because smoking is increasing the metabolism. ANCOVA analyses were conducted to control for baseline imbalances of BMI at t0.

Results: Regarding the product form, there is no difference in the usage of nicotine patches or gums between women and men, but women seem to prefer lozenges and men inhalers. There is no difference concerning the beginning of the product intake. In the majority of cases the intake starts with the quit day. Women seem to be more afraid of possible side effects of NRT than men are (Chi2(1) = 5.662, p = .02). Women use their nicotine product in average 35 days, men 24 days. Due to the small sample size the difference is not significant. Concerning weight gain, there is a trend that women gain more weight than men over the six months period but the differences are not significant (F= .887, p = .35). With reference to abstinence rates there is no significant difference between women and men using nicotine replacement products.

Conclusion: In contrast to other findings, in this “real world”-setting women are as successful as men with NRT. An explanation for this might be the different usage of nicotine products, especially the different duration of intake. Taken into account that all subjects attended a smoking cessation treatment, women might have had a compensating benefit of this treatment.

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POS5-20  WOMEN AND NICOTINE REPLACEMENT THERAPY: FINDINGS FROM A “REAL WORLD”-SETTING

Sabine Gradl*, Andrea Chmitorz and Christoph Kröger

Objectives: Medical findings point out the gender specific difference in the effect of nicotine. Women seem to metabolize nicotine faster than men and therefore benefit less from a nicotine substitution. Little is known about how women use nicotine products and about the effects of a nicotine replacement therapy (NRT) consumed outside clinical trials. This study aims to examine women’s usage of NRT and its outcomes in a “real world”-setting.

Methods: The study’s sample included 71 German adult smokers who attended a cognitive-behavioural smoking cessation programme. Smokers using NRT were included in the study sample. Smokers using Bupropion or Varenicline as medication were excluded from the study. In a longitudinal non-randomized controlled study, n= 71 medication users (females= 43, males= 28) were investigated at three measurement times: at baseline in the first session (t0), at the end of the course (t1) and at 6-months follow-up (t2).

Results: Regarding the product form, there is no difference in the usage of nicotine patches or gums between women and men, but women seem to prefer lozenges and men inhalers. There is no difference concerning the beginning of the product intake. In the majority of cases the intake starts with the quit day. Women seem to be more afraid of possible side effects of NRT than men are (Chi2(1) = 5.662, p = .02). Women use their nicotine product in average 35 days, men 24 days. Due to the small sample size the difference is not significant. Concerning weight gain, there is a trend that women gain more weight than men over the six months period but the differences are not significant (F= .887, p = .35). With reference to abstinence rates there is no significant difference between women and men using nicotine replacement products.

Conclusion: In contrast to other findings, in this “real world”-setting women are as successful as men with NRT. An explanation for this might be the different usage of nicotine products, especially the different duration of intake. Taken into account that all subjects attended a smoking cessation treatment, women might have had a compensating benefit of this treatment.

No funding.

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ASSOCIATION OF MINDFULNESS WITH DEPENDENCE, WITHDRAWAL, AND AGENCY AMONG ADULT SMOKERS PREPARING TO QUIT

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Quitting smoking is a major life stressor that results in numerous aversive consequences, such as increased levels of negative affect that can persist for months. Thus, the identification of factors that may enhance behavioral and emotional regulation after quitting may ultimately be useful in enhancing quit rates and preventing relapse. One factor that has been broadly and consistently linked with enhanced behavioral and emotional regulation is mindfulness. To our knowledge, no studies have directly examined associations of mindfulness with nicotine dependence, withdrawal or agency, three critical constructs that predict cessation outcomes. This study examined baseline associations of mindfulness with demographics, smoking history, dependence, withdrawal, and agency among 158 smokers enrolled in a smoking cessation trial. Specifically, associations of two mindfulness measures—the MAAS and the KIMS—with demographics (age, gender, marital status, education, unemployment, annual household income) and smoking variables (cigarettes per day, years smoked, CO) were examined using zero-order correlations. Next, linear regression analyses adjusted for age, gender, race/ethnicity, educational attainment, income, and education examined the associations of mindfulness with dependence, withdrawal, and agency (i.e., self-efficacy and affect regulation expectancies). Consistent with hypotheses, multiple regression models indicated that mindfulness was negatively associated with dependence and withdrawal, and positively associated with a sense of agency (i.e., self-efficacy and affect regulation expectancies) regarding cessation (all p values < .05). Moreover, the models indicated that mindfulness remained significantly associated with dependence and withdrawal, independent of other key demographic, smoking, and treatment factors. Our results suggest that mindfulness may be an important predictor of vulnerability to relapse among the general population of adult smokers preparing to quit.

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MATERNAL SMOKING PREVALENCE AND LOW BIRTH WEIGHT RATES: MASSACHUSETTS AND IRELAND

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Background: Maternal smoking increases the risk of low birth weight (LBW) births. However, it is unclear whether declining prenatal maternal smoking prevalence has any impacts on LBW rates. Massachusetts, a state with a comprehensive tobacco control program (MTCP) since 1993, recently reported very low maternal smoking prevalence (7%), while Ireland, with a comprehensive nationwide workplace smoking ban introduced in March 2004 has a relatively high maternal smoking prevalence (13%). Closer examination revealed a 29% LBW rates (4-6%), however, are almost similar both in Massachusetts and Ireland.

Objectives: This study examined temporal patterns in singleton LBW and maternal smoking rates both in Massachusetts and Ireland between 1994 and 2004. Secondly, smoking-attributable LBW births between 1994 and 2004 were calculated in Massachusetts to indirectly evaluate the impact of the MTCP. Finally, adjusted LBW rates one year before and one year after the Irish workplace smoking ban were also estimated. Methods: Joinpoint Regression Analyses were performed to calculate annual-percent-changes in LBW and maternal smoking rates. Population-Attributable-Risk% was calculated based on a summary Relative Risk between 1994 and 2004, using the NHS CHP database. Logistic regression analyses were performed to estimate adjusted LBW rates post the Irish smoking ban, using Eurok2 maternity clinical database system.

Results: LBW rates showed a non-significant annual rise (1%) between 1994 and 2004 for both Massachusetts and Ireland, while maternal smoking rates declined significantly by almost 7% yearly in both populations. An excess of 271 LBW babies were born in 2004 relative to 1994 in Massachusetts that could be attributed to smoking factors other than maternal smoking. A significant fall in maternal smoking prevalence was observed in Dublin one year post the smoking ban (from 23.4% in 2003 to 20.6% in 2005) but no significant change in LBW rates ([from 5% to 5.1%, respectively]; p=0.12) were observed.

Conclusion: Significant declines in maternal smoking prevalence are not reflected in LBW rates in population settings, with comprehensive tobacco control programs in place.

Health Research Board of Ireland and the US National Cancer Institute.

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EFFECTS OF TOBACCO TAXATION AND PRICING ON SMOKING BEHAVIOR IN HIGH RISK POPULATIONS: A KNOWLEDGE SYNTHESIS

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Tobacco taxation has an enormous influence on the general population and is recognized as an essential component of a comprehensive tobacco control strategy. However, much less is known about the impact of taxation on specific subgroups. Are they influenced to the same extent as the general population? Do they respond to proportional measures to influence smoking behavior? To fully realize the benefits of tobacco taxation it is vital to understand the impact of increased taxes among high-risk subpopulations. Objective: To synthesize the evidence regarding the differential effects of taxation and price on smoking behavior in six high-risk subpopulations: 1) Youth (<19 yrs); 2) Young adults (18-24 yrs); 3) Low SES (persons of low socio-economic status); 4) Dual Diagnosis (mental health or non-cocaine substance abuse disorders); 5) Heavy and/or Long-term smokers; and 6) Aboriginal persons. Method: A knowledge synthesis was conducted using two main sources of information: 1) systematic review of the literature, and 2) expert opinion through an expert advisory panel. Results: Most studies reviewed found that raising cigarette prices through increased taxes is a highly effective policy measure for reducing smoking behavior among youth, young adults, and persons of low socioeconomic status. In contrast, there is a striking lack of knowledge about the impact of increasing cigarette prices on smoking behavior in three subpopulations: heavy and/or long-term smokers, persons with a dual diagnosis and Aboriginal people. Given their high prevalence of smoking, urgent attention is needed to develop effective policies for these subpopulations. Significance: Significant strides have been made in reducing smoking over the past three decades. However, the health toll of smoking remains a compelling global health challenge. Concerted efforts are needed to reach a higher summit in tobacco control, especially with subpopulations at high risk. This study produced policy recommendations and research priorities to maximize the potential benefits of tax strategies in reducing the disproportionate burden of tobacco use among high-risk subpopulations.

Canadian Tobacco Control Research Initiative (CTCRI). Toronto, Canada.
Given the impact of depressive symptoms on cessation outcomes, there has been great interest in evaluating the potential for increased efficacy when smoking cessation interventions include components that target depressive symptoms specifically. Although promising, these efforts largely have not demonstrated significant impact on depressive symptoms during quit attempts and the mechanism for these treatments effects do not appear to be related primarily to depressive symptoms. Comprised of a predominantly minority (75.7% African-American) and low income (56.8% reported a household income of 49,999 U.S. dollars or less) sample with elevated depressive symptoms (baseline BDI-II score greater than or equal to 7), this study tested a behavioral treatment development project that tested the effectiveness of a behavioral activation treatment for smoking (BATS) paired with standard smoking cessation strategies including nicotine replacement therapy (n = 26) compared to a control comparison of standard smoking cessation strategies alone (n = 16). Behavioral activation is based in reinforcement theory and involves a systematic, structured approach to increasing positive behaviors and decreasing the frequency of depressed behavior. Results supported the initial efficacy of BATS, including overall higher point prevalence abstinence (Odds Ratio = 3.27, p<0.02) and a general decrease in depressive symptoms (Beta = -1.46, standard error = 0.66, p=0.04) over the majority of the 6-month study period. These initial results suggest BATS is a promising intervention that may promote smoking cessation and improvement of depressive symptoms among underserved low income and minority smokers. Follow-up work is needed with a larger sample to replicate results, and examine mechanisms and potential moderators of treatment efficacy.

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**POSS-26**

RANDOMIZED CONTROLLED TRIAL OF BEHAVIORAL ACTIVATION SMOKING CESSATION TREATMENT FOR SMOKERS WITH ELEVATED DEPRESSIVE SYMPTOMS

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**POSS-27**

SMOKINGcessation EFFICACY AND SAFETY OF VARENICLINE in PATIENTS with CARDIOVASCULAR DISEASE

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Background: Smokers with cardiovascular disease (CVD) lower their CVD mortality by 36% if they stop smoking, yet many cannot quit. Varenicline (VAR), a nicotine acetylcholine receptor partial agonist, is effective for smoking cessation in healthy smokers, but its efficacy and safety in smokers with CVD is not known. Methods: N=101 nicotine-dependent community-dwelling adult cigarette smokers were randomized to double-blind placebo-controlled multicenter trial comparing the efficacy and safety of VAR for smoking cessation with placebo (PCB) in smokers (>10 cigarettes/day) aged 35–75 years, who had stable cardiovascular (CV), cerebrovascular, or peripheral vascular disease for at least 2 months. Results: Subjects received weekly counselling plus either VAR (1 mg BID) or PCB for 12 weeks and were followed for 52 weeks. The carbon monoxide (CO)-confirmed continuous abstinence rate (CAR) for the last 4 weeks of treatment (Weeks 9–12) was the primary endpoint. Secondary endpoints were CAR for Weeks 9–52, adverse events (AE), CV events and mortality. Results: 714 subjects (mean age=57; 79% male; 81% white) were randomized to VAR (355) or PCB (359). CO-confirmed CAR was higher for VAR than PCB at the end of the 1st (53.9% vs. 37.9%; OR: 3.05, 95% CI: 2.02-4.65), 2nd (44.8% vs. 27.7%; OR: 2.95, 95% CI: 1.91-4.81), and through 52 weeks (Weeks 9-52: 19.2% vs. 7.2%, OR: 3.14, 95% CI: 1.93-5.11). The superiority of VAR over PCB for CAR 9-12 and CAR 9-52 was found in subgroups stratified by gender, age, race (white/non-white), cigarette/day (>20 vs. less). Fagerström score, and presence of cardiac disease vs. peripheral vascular disease only. VAR and PCB groups did not differ significantly in CV events (7.4% vs. 6.6%), serious AEs (6.5% vs. 6.0%), CV mortality (0.6% vs. 1.4%), AEs due to depressed mood disorders (3.1% vs. 2.3%) or suicidal behavior (0 subjects).

Conclusion: In CVD patients, VAR has an acceptable safety profile and is an effective treatment for smoking cessation regardless of gender, age, race or presence of cardiac disease.

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**POSS-28**

PERCEIVED RISKS AND BENEFITS OF QUITTING SMOKING IN NON-TREATMENT SEEKERS

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Perceived risks and benefits of quitting smoking are related to treatment motivation and outcome in smokers motivated to quit smoking. Little is known about beliefs about quitting and treatment motivation in non-treatment seeking smokers. The purpose of this study was to examine the relationship of perceived risks and benefits of quitting with treatment motivation in non-treatment seeking smokers. One hundred eight-eight daily cigarette smokers not currently motivated to quit smoking completed measures of perceived risks and benefits of quitting and motivation to quit. Increased self-esteem from quitting was positively related to desire to quit, expected success at quitting, confidence in quitting, and motivation to quit. Greater perceived risks of cravings were related to greater expected difficulty of remaining abstinent and greater perceived risk of increased negative affect was related to decreased expectation of success at quitting, confidence for quitting, and increased expectation for difficulty remaining abstinent. Greater perceived risk of weight gain was related to being less likely to have a goal of complete abstinence. There were no gender, ethnicity, age, or education differences in the relationship of perceived risks and benefits of quitting and motivation. Learning more about the risks and benefits that relate to motivation to quit for non-treatment seeking smokers might identify ways to design campaigns to target this group to increase quit motivation such as focusing on self esteem beliefs.

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**POSS-29**

A RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED CLINICAL TRIAL OF SELEGILINE HYDROCHLORIDE FOR SMOKING CESSATION: PRELIMINARY RESULTS

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Aim: The primary aim of this study was to determine the safety and efficacy of the monoamine oxidase-B subtype (MAO-B) inhibitor selegiline hydrochloride (L-Deprenyl; Eldepryl) as an aid for smoking cessation in community-dwelling cigarette smokers.

Methods: N=101 nicotine-dependent community-dwelling adult cigarette smokers participated in this 8-week randomized, double-blind, placebo-controlled trial. Participants received either selegiline hydrochloride (DEP, 5 mg bid, n=51) or placebo (PLO, n=50), in combination with brief (<10 minutes) manualized smoking cessation counseling. The main outcomes measures were 7-day point prevalence of smoking at end of trial (EOT), 4-week continuous smoking abstinence at end of trial (CA), and 7-day point prevalence abstinence at 6-month follow-up (6MFU).

Results: Participants did not differ by medication group on baseline smoking variables, age, or gender. The medication groups did differ on racial composition (p<0.05). Treatment retention and medication compliance was high and not significantly different between DEP and PLO. Rates of smoking did not differ by medication group (EOT: DEP=20%, PLO=28%, N=101, p=0.32; CA: DEP=18%, PLO=24%, N=101, p=0.43; 6MFU: DEP=16%, PLO=17%, N=87, p=0.89). Adverse events were not significantly different and comparable between study medication groups. Participants in the DEP group were more likely than PLO to report dry mouth (25.5% versus 8.2%, p<0.05).

Conclusions: Our results suggest that selegiline hydrochloride was safe and well tolerated by adult smokers, but did not improve smoking abstinence rates compared to placebo. It is possible that the high-placebo response rates in this trial may have contributed to the lack of efficacy of selegiline in the present trial.

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After the release in Australia of Varenicline (Champix) it became evident that not all smokers referred to our smoking clinics responded positively to this treatment, as just is predicted and shown in clinical trials. We found some smokers quit within the “target date” required (within 14 days after initiation) (26%), others were unable to do so throughout the entire tablet taking treatment (at least 7 weeks) (32%) while others were able to reduce their smoking significantly but were not able to achieve total abstinence altogether during the tablet taking period (42%). In this last group of smokers we attempted to achieve total smoking abstinence by recommending the addition of pulsatile forms of 4mg nicotine (gums or lozenges to suit) at times of strong cravings or urges to smoke. To date 20 smokers have been initiated on the combination of Varenicline and 4mg nicotine gum or lozenges, 4 weeks after initiation of Varenicline. All (100%) have had previous unsuccessful experiences with NRT. All showed declines in numbers of cigarettes smoked per day and declines in expired Carbon Monoxide (CO) but not cessation over the first four weeks of Varenicline treatment. Of this group 50% (n=10) had abstained from smoking altogether after the addition of pulsatile NRT as required. This was validated by serial expired (CO) over three months. No adverse reactions were reported. Varenicline Tatrare has been developed to target the alpha 4 beta 2 nicotinic acetylcholine receptor sub-type as a partial agonist/antagonist and smokers are cautioned against using concomitant nicotine replacement products, however, it is believed that more than one nicotine receptor subtype is involved in tobacco addiction. We hypothesize that other receptors are unaffected by Varenicline and remain available for nicotine and that it may be valid to introduce nicotine replacement therapies in combination with Varenicline to enhance abstinence. Large placebo control trials may be warranted for this combination of medications.

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POS5-31
A COMPARISON OF TWO APPROACHES TO MEASURING THE RELATIVE REINFORCEMENT VALUE OF SMOKING IN ADOLESCENT SMOokers
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Behavioral economics emphasizes that decisions to engage in a behavior are influenced by the reinforcing value of the behavior compared to alternative sources of reinforcement. Two methods of quantifying the relative reinforcement value of smoking (RRS) were studied by comparing responses to the Adolescent Reinforcement Survey Schedule (ARSS) and the Young Adult Reinforcement Survey Schedule (YARIS). RRS were studied by comparing responses to the Adolescent Reinforcement Survey Schedule (ARSS) and the Young Adult Reinforcement Survey Schedule (YARIS). Twomethods of quantifying the relative reinforcement value of smoking. TheARSS is easy to administer, but reliance on retrospective average is limited. The ARSS is easy to administer, but reliance on retrospective average is limited. We hypothesized that other receptors are unaffected by Varenicline and remain available for nicotine and that it may be valid to introduce nicotine replacement therapies in combination with Varenicline to enhance abstinence. Large placebo control trials may be warranted for this combination of medications.

No funding.

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POS5-32
THE ROLE OF SELF IN TAILORQD QUIT SMOKING MESSESSES: AN FMRI STUDY
Hannah Faye Chua*, Emre Demiralp, and Vic Strecher, University of Michigan

Smoking leads to illnesses including addiction, cancer, and cardiovascular and respiratory diseases. Research has shown that individually tailored smoking cessation programs are more successful than generic one-size-fits-all programs; people are more likely to quit smoking when the message of the program is highly tailored to them. Indeed our prior work has shown that smokers do process high-tailored and low-tailored messages differently as shown by greater neural activation patterns in the medial prefrontal cortex and precuneus/posterior cingulate for high-tailored messages. In the current study we investigate whether this differential activation can be operationalized in terms of self-related processing. Specifically the medial prefrontal cortex and precuneus/posterior cingulate has been implicated to some extent with processing and relating external information to self. In the current study, 50 smokers interested to quit smoking received personalized feedback messages (“You are a 45 year old male smoker”), targeted messages (“Saving money is a common reason for quitting”), and neutral messages (“About 90% of people on Earth live north of the equator”). Participants also completed a self-appraisal task; they judged whether an adjective (e.g., athletic, described them or not (self task), or whether the adjective is of positive or negative valence (control task). Results indicate that both personalized feedback messages and self task activated rostral medial prefrontal cortex and precuneus/posterior cingulate. Moreover, there was significant overlap in activation areas between the two conditions, suggesting that neural responses to tailored messages are associated with self-related processing. This work illuminates the role of perceived personal relevance of the messages, which was shown previously to have a mediating role on quitting, it is possible that smoking cessation programs are more likely to pay attention to self-related high-tailored messages than less-tailored, less self-relevant messages, processing them deeper and remembering them better—a self-reference effect. The present work has implications for improving health communica tions programming for smoking cessation.

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POS5-33
ASSOCIATIONS OF CHRNA2 GENE VARIANTS WITH QUITTING INTEREST AND WITH SHORT-TERM QUITTINQ IN RESPONSE TO NICOTINE PATCH
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This study examined the influence of a single nucleotide polymorphism (SNP) in the nicotinic acetylcholine receptor beta-2 subunit (CHRNA2, rs2072661) gene on current quitting interest and on short-term quitting in response to nicotine vs. placebo patch. Participants (n = 156) were those of European descent with the following mean (SD) characteristics: 17.4 (6.1) cigs/day, 29.0 (11.0) years of age, and 4.6 (1.4) FTND score. “Treatment seeking” status was determined by stated interest in quitting permanently; “treatment seekers” (n = 64) were those wanting to quit in the next month, and “non-treatment seekers” (n = 92) were those with no intention of quitting in the next 6 months. All received 21 mg nicotine or placebo patch, in counter-balanced order, during two separate 5-day simulated quit attempts, each preceded by a week of ad lib smoking. Abstinence was assessed daily over the last 4 days by CO<5 ppm. Treatment seeking was more common among those with the GG genotype (n = 47 out of 96) for a 3-UTR variant of CHRNA2, compared with those with AG or AA genotypes (n = 17 out of 60). X2 = 6.49, p=0.01, phi=0.20. Controlling for treatment seeking status, a significant gene x medication interaction was seen for days abstinent, F (1,153) = 7.78, p<0.01. Days abstinent during the nicotine versus placebo patch condition were greater in those with the GG genotype (M=SE=1.7+0.2 vs. 1.2+0.2 days, out of 4) compared with AG or AA (1.2+0.2 vs. 1.2+0.2 days). These findings suggest that smokers with the GG allele for the CHRNA2 3-UTR variant are more likely to be interested in quitting smoking permanently (i.e. after the study) and were also more responsive to nicotine patch effects on abstinence early in a simulated quit attempt, consistent with a recent study linking this variant with bupropion treatment response.

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POSS-35  
EVENING TYPES SNORE MORE AND ARE MORE NICOTINE DEPENDENT – A STUDY OF FINNISH ADULT TWINS

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We studied the association of diurnal type, smoking behaviour and nicotine dependence using the Finnish Twin Cohort of same-sex adult twin individuals (n=2232). We selected for smoking behaviour with surveys in 1975, 1981 and 1989. Nicotine dependence was assessed later among smoking twins participating in the Nicotine Addiction Genetics Family Study (n=676). Answers to a question on diurnal type in 1981 were classified in four categories: 1) clearly a morning type, 2) to some extent a morning type, 3) to some extent an evening type, and 4) clearly an evening type. At age 50, self-report questionnaires were used to evaluate smoking, nicotine dependence and alcohol use (González et al., 2011).

Evening types were more often ever and current smokers. Clearly evening types were almost twice as often (OR 1.9, 95%CI 1.7-2.1) current smokers compared to clearly morning types. Among ever smokers evening types had smoked 2.5 pack-years more than morning types (95%CI 1.8-3.2) and among current smokers they had smoked 2.1 pack-years more (95%CI 1.3-3.9). Among current smokers, average age of initiating smoking by diurnal type did not differ, but evening types smoked 2.7 cigarettes per day by 95%CI 2.0-3.3) more than morning types. Among current smokers in 1981, evening type did not predict smoking cessation by 1990 (OR 0.84, 95%CI 0.61-1.17). Evening types were more nicotine dependent. Adjusted for sex, age and age at initiation clearly evening types were almost three times more often nicotine dependent by (DVM-IV) compared to clearly morning types (OR 2.9, 95%CI 1.5-5.3). Also nicotine dependence measured by FTND showed that clearly evening types were more dependent (scoring 0.59 points more, adjusted for age and sex, 95%CI 0.01-1.2), such that evening types had a mean, unadjusted FTND of 4.7 and morning types 4.0. Diurnal type is a novel risk factor for smoking and nicotine dependence. Current evening types are more dependent than current morning types, smoke more and are more dependent. Evening type however does not predict smoking cessation. The possible modulating effect of nicotine on diurnal type should be investigated further.

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POSS-36  
SMOKING CESSATION FOR YOUTH AND ADULTS WHO BINGE DRINK

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The objective of this investigation was to evaluate the feasibility, acceptability, and pilot test a novel smoking cessation intervention for young adults that integrates behavioral treatment of previously identified binge drinking. Participants included 41 young adult smokers who binged drink (M=23 years of age, SD=±3; 21%; 49% female; 93% White). A randomized, two-group design was employed with 24 weeks of follow-up. Participants were randomized to usual care (UC; n=19) or a novel combined intervention that included a 2-weeks of nicotine replacement therapy or the identical smoking cessation treatment plus a binge drinking intervention, which is, combined intervention (CI, n=22). The interventions were feasible as indicated by overall acceptability, feasibility and potential for clinical application. Our study results are expected to improve male smoking cessation and drinking prevention and cessation initiatives that target high risk youth. The preliminary data collected in this study may provide the basis for a larger-scale clinical trial.

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POSS-37  
A COMPARISON OF SMOKING EXPECTANCIES AMONG CAUCASIAN, HISPANIC, AND AFRICAN-AMERICAN CHILDREN

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The primary aim of this study was to utilize focus groups and self-report measures to evaluate the relative importance and identified adolescent smoking outcome expectancies among non-Hispanic Caucasian, African-American, and Hispanic children in grades 4 through 6 (ages 8 to 13). The resultant smoking outcome expectancies will serve as intervention targets in an expectancy challenge. A sample of 146 children (mean age = 10.34 years, SD = 2.05) were included in the study. Children were stratified by gender and racial/ethnic minority status (Caucasian n = 16 females, 17 males; Hispanic n = 17 females and 16 males; African-American n = 16 females and 18 males). Smoking outcome expectancies were assessed using the Adolescent Form (Plummer et al., 2001), which is a measure of how tempted the participant would be to smoke in various situations. There were no differences on smoking expectancies by racial/ethnic group. Gender differences were found on two of the smoking outcome expectancy scales, with a trend for girls to smoke more than boys on the Positive Reinforcement scale and less than boys on the Negative Reinforcement scale.

This research was conducted while the first author was at the Brown University Center for Alcohol and Addiction Studies, Providence, RI. Supported by the National Cancer Institute 5 R03 CA115306-02.

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POSS-38 EFFECTS OF AN INDOOR SMOKING BAN IN CORRESPONDENTIAL FACILITIES

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Context: Tobacco use is deeply embedded in prison culture and can be considered a prison life norm. Cigarettes are frequently the reason for disputes among detainees and lead to disciplinary measures when they are traded, stolen or pawned. In addition prison staff and detainees also find themselves exposed to hazardous levels of second-hand smoke. In the last decade several governments have introduced complete smoking bans in their institutions. Since February 2008, a smoking ban has been implemented in Quebec’s provincial correctional facilities. However, prison staff and inmates can still smoke in outdoor settings. Six months after the partial smoking ban, we studied the effects on the staff and inmates of these facilities.

Methods: During the summer of 2008 we conducted a study in three of Quebec’s largest provincial correctional facilities, using both quantitative and qualitative approaches. Data was collected from 73 male and 40 female inmates using questionnaires and face-to-face interviews with 28 male inmates, 21 female inmates and 27 staff members.

Results: Eighty percent of inmates included in the sample were smokers. Following the ban, 52% of smokers perceived smoking fewer cigarettes per day. However, 51% of all inmates claimed that they were still exposed to the same levels of second hand smoke as they were before the ban, since nearly all smokers kept smoking indoors. According to the majority of the inmates the ban appeared to have generated an increase in the tensions between inmates (84%) and between inmates and personnel (76%) but not between smokers and non-smokers. An increase in the number of disputes among inmates was reported by 61% and 69% of inmates, respectively. Differences in implementing the ban were observed between prisons, between sectors within individual prisons, and between male and female inmates.

Conclusion: Our study presents the difficulties, which occurred while implementing a partial smoking ban in correctional facilities. It also informs on the effects of the ban on inmates’ smoking habits and on the prison staff’s exposure to second hand smoke.

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POSS-39 SMOKING BEHAVIOR PATTERNS PREDICTING CHRONIC BRONCHITIS SYMPTOMS IN LONG-TERM FOLLOW-UP AMONG FINNISH ADULTS

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We investigated long-term effects of smoking behavior patterns on self-reported chronic bronchitis symptoms within the Finnish Adult Twin Cohort, including 21,609 individuals from the 1975 and 1981, of which 11,015 participated later in 1990. Chronic bronchitis symptom self-reports were derived from the Finnish Adult Twin Cohort, including 21,609 individuals from the 1975 and 1981, of which 11,015 participated later in 1990. Chronic bronchitis symptoms were defined as the single most effective way of reducing tobacco use, particularly among young people and those on low incomes. At the same time, higher taxes lead to significant increases in government tax revenue that can be used to support other tobacco control activities. Opponents of tax increases, however, argue that higher taxes will increase illicit trade in tobacco products and, as a result, will not generate sufficient new government revenues; will result in substantial unemployment and as jobs are lost in the tobacco growing, manufacturing, and related sectors; and will adversely impact on the poor. In an effort to address the arguments and to provide clear evidence on the effectiveness of tobacco taxation in reducing tobacco use and promoting public health, the Bloomberg Global Initiative to Reduce to Reduce Tobacco Use has commissioned a series of reports on the economics of tobacco taxation for the low and middle income countries where most tobacco users reside. This presentation will highlight the findings from six of these reports, for Bangladesh, Egypt, India, Pakistan, Philipines, and Turkey. New evidence on the impact of tobacco excise taxes on the demand for tobac -

POSS-40 SMOKING BEHAVIOR AND QUALITY OF LIFE AMONG A COHORT OF 752 FIVE-YEAR SURVIVORS OF LUNG CANCER

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Purpose: To describe the relationship of cigarette smoking on the quality of life (QOL) among long-term lung cancer (LLC) survivors.

Patients and Methods: LLC survivors (5-year or greater diagnosis, n=782) were mailed the QOL surveys between 2002-2007. QOL was measured by the Lung Cancer Symptom Scale (LCSS), Linear analogue Self Assessment Scale (LASA) and Health Status Questionnaire Short Form-8 (SF-8). Univariate and multivariate models were tested. A 5-10 point difference between groups was a priori defined as clinically significant on transformed scales (0-100; poor to high QOL).

Results: At the time of lung cancer diagnosis, the mean age (SD) was 64.2±10), 49% were women, and 14.8%, 53.9%, and 31.2% of the 674 patients who completed follow-up assessments beyond five years were never, former and current smokers, respectively. 24.8 percent of baseline current smokers continued to smoke (persistent) and 3.3% of the former smokers relapsed back to smoking (relapsed former); referred to as current smokers below. The mean (SD) overall QOL scores for the never and current smokers were 78.4(19.7) and 68.5(23.8), respectively (p=0.0123). Eleven individual LCSS/LASA/SF-8 items were clinically and statistically different between the never and current smokers’ overall QOL, cough, shortness of breath, pain severity, activities, pain sensitivity, frequency, mental, physical (2 tools), spiritual and emotional well being. After univariate testing found statistically significant predictors. Multivariate regression models showed that increasing number of cigarettes per day and age, heart disease, and metastatic disease all were independent predictors of a lower QOL while stage at diagnosis, chemotherapy, and pulmonary disease were not. Conclusion: These findings suggest persistent cigarette smoking after lung cancer diagnosis has a negative impact on QOL even among LLC survivors. The negative impact of smoking on patient well-being is profound, even after having survived the arduous of the acute treatment and an extraordinarily long period of time post-diagnosis. This supports the stance that smoking cessation should be encouraged at all stages of the lung cancer experience.

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POSS-41 THE ECONOMICS OF TOBACCO TAXATION IN LOW AND MIDDLE INCOME COUNTRIES

Frank J. Chaloupka*, University of Illinois at Chicago

Increases in cigarette and other tobacco product excise taxes are wildly regarded as the single most effective way of reducing tobacco use, particularly among young people and those on low incomes. At the same time, higher taxes lead to significant increases in government tax revenue that can be used to support other tobacco control activities. Opponents of tax increases, however, argue that higher taxes will increase illicit trade in tobacco products and, as a result, will not generate sufficient new government revenues; will result in substantial unemployment and as jobs are lost in the tobacco growing, manufacturing, and related sectors; and will adversely impact on the poor. In an effort to address the arguments and to provide clear evidence on the effectiveness of tobacco taxation in reducing tobacco use and promoting public health, the Bloomberg Global Initiative to Reduce to Reduce Tobacco Use has commissioned a series of reports on the economics of tobacco taxation for the low and middle income countries where most tobacco users reside. This presentation will highlight the findings from six of these reports, for Bangladesh, Egypt, India, Pakistan, Philipines, and Turkey. New evidence on the impact of tobacco excise taxes on the demand for tobac -

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Cigarette Excise Taxation: The Impact of Tax Structure on Prices, Revenues, and Cigarette Smoking

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Cigarette and other tobacco product excise tax increases are widely viewed as the single most effective policy for reducing tobacco use. While much is known about the impact of tobacco tax increases on tobacco product prices, tobacco use and government revenues, existing research has not considered the impact of tax structure on these outcomes. Tax structure varies significantly across countries, with many using specific excise taxes (e.g., based on weight or number of cigarettes), others using ad valorem excise taxes (e.g., based on distributor or retail prices), and others using a combination of the two; some tax different products at different rates, based on product characteristics (e.g., filtered or non-filtered; price; domestically produced or imported). The European Union (EU), for example, mandates that member countries impose both specific and ad valorem taxes, with the specific component accounting for between 5 and 55% of the total and the total tax accounting for at least 57% of retail cigarette prices. This study is the first to examine the implications of tobacco tax structure, using annual data from 21 EU countries over the period from 1998 through 2007 to econometrically examine the impact of cigarette excise tax structure on average cigarette prices, the gap between premium and discount cigarette prices, government revenues from cigarette taxes, cigarette consumption, and smoking prevalence, controlling for various socioeconomic factors. EU and US data suggests that greater reliance on ad valorem excise taxes results in higher average cigarette prices, a smaller gap in prices between premium and discount cigarette brands, higher and more stable government revenue from cigarette taxes, reduced cigarette consumption and lower smoking prevalence. The magnitude of these effects varies with the degree of competition in cigarette markets; for example, the impact on the price gap is greater in more competitive markets, while the effects on the stability of government revenue are greater in more concentrated markets. These findings imply that specific excise taxes are more effective from both a revenue and a public health perspective.

Motivational Interviewing for Smoking Cessation: A Meta-Analytic Review

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Motivational interviewing (MI) is a treatment approach that has been widely examined as an intervention for tobacco dependence and is recommended in clinical practice guidelines. Previous reviews evaluating the efficacy of MI for smoking cessation have not shown promising results, but have included few studies. The current study is a meta-analysis of MI for smoking cessation that included 34 controlled trials published or available electronically before June of 2008. The trials represent a diverse group of participants and take place in a range of settings. Combined effect sizes for MI in the studies were low (d=13) and subgroup analyses investigating the impact of moderating variables on outcome were insignificant. These findings suggest that the efficacy of MI for tobacco dependence is minimal. The results are interpreted in light of recent reports suggesting that the majority of smokers may already be motivated to quit. While MI may have limited applicability to the treatment of tobacco dependence, it is recommended that researchers continue to investigate this therapeutic strategy with a decreased focus on the resolution of ambivalence.

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Association Between Cigarette Smoking and Other Health Risk Behaviors Among Students at Five Universities

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Objective: This paper examines smoking and related health risks and behaviors among students at five universities in the U.S. and Canada.

Method: A Health Screening Survey (HSS) was completed by 2091 college and graduate school student volunteers seeking routine care at their university health centers. Independent variables were analyzed descriptively and in multivariate regression analyses with three levels of smoking (none, <1 cigarette per day, and >1 cigarette per day) and degree of tobacco dependence (based on morning craving to smoke) to determine predictors and associated risks.

Results: Nearly a quarter (23%) of students reported current smoking, with 41% of them smoking less than one cigarette per day (cpd). Of those who smoked daily, 80% smoked fewer than 10 cpd, but almost half (45%) reported waking up in the morning wanting to smoke. Smoking was associated with high-risk alcohol use, experience of emotional and physical abuse, physical abuse or depression, less physical activity and increased utilization of emergency and mental health services. In multiple regression analyses, dependent smokers were more than twice as likely to be depressed (OR=2.32, p<0.001) report emotional or physical abuse (OR=2.07, p<0.001) or seek counseling for mental health issues (OR=2.07, p<0.001), compared with smokers who did not report morning craving.

Conclusions: Current smokers who smoke, even occasionally, are at risk for tobacco dependence and long-term sequelae of smoking, as well as more immediate harms due to associated health risks and behaviors. Health care providers have an opportunity to help students quit smoking and prevent or mitigate many of these adverse outcomes.

Toxicity Dependence, Treatment and Smoke-Free Policies: A Survey of Mental Health Professionals’ Knowledge and Attitudes

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Background: Mental health inpatient units in England have to be smoke-free by law. Preliminary studies have indicated that staff may not have the necessary knowledge and resources to support implementation of smoke-free policy.

Objectives: To investigate staff knowledge and attitudes relating to smoking prevalence, dependence, treatment, and its relation with mental illness, and the relationship between smoking and mental illness.

Design: Questionnaire survey of all clinical staff of 25 inpatient mental health units of a UK NHS mental health Trust.

Results: 459 (68%) staff returned the questionnaire. Over half (57%) did not consider dealing with patient’s smoking to be their responsibility, and only half (50%) felt that they could make time to treat smoking in their working routine. All professional groups demonstrated a lack of knowledge about tobacco dependence, treatment, and its relation with mental illness, with healthcare assistants being overall least knowledgeable. Nevertheless, 41% of doctors were unaware that smoking can increase the dose of antipsychotic medication, and 36% were unaware that stopping smoking could reduce the dose needed. Staff overestimated the prevalence of smoking in the general population, and over a third (36.4%) believed that nicotine was carcinogenic. Staff smoking prevalence was 26% (10% of doctors, 22% of other qualified staff and 37% of non-qualified staff) and smokers were more likely to have reservations about the importance of the smoke-free policy, and the treatment of nicotine dependence among patients. Training appeared to improve knowledge to a certain extent.

Conclusions: Support for inpatient smokers by staff is likely to be severely compromised by low levels of knowledge and awareness of tobacco dependence. Further training and support for all staff groups is urgently required.

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PO55-46  DURATION OF SMOKING IN AFRICAN-AMERICANS AND WHITES

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While African-Americans start smoking later in life and are lighter smokers than Whites, they have a higher incidence of and mortality from lung cancer. This higher incidence and mortality is a puzzling fact for which no clear explanation has been provided. While there is overwhelming evidence that there is a strong association between duration of smoking and developing lung cancer, the difference in the duration of smoking between African-Americans and Whites has never been examined. We utilized data from the 2006/2007 Tobacco Use Supplement to the Current Population Survey and showed that median duration of smoking is about three years longer among African-Americans than Whites. Survival analysis modeling also revealed a substantially lower probability of cessation among African-Americans, accounting for socioeconomic position and other relevant sociodemographic variables. Appropriate interventions and policies should be devised to enhance cessation rates among African Americans. No funding.

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PO55-47  THE IMPACT OF POSITIVE MOOD ON SELF-CONTROL DEPLETION IN SMOKING

Dikla Shmueli, Ph.D.,* and Judith J. Prochaska, Ph.D., M.P.H., University of California, San Francisco

The self-control strength model suggests that self-regulation relies on a limited resource, which is consumed with use and thus impairs subsequent attempts to control behavior. Consistent with this model, our prior research has found that resisting tempting sweets impairs subsequent smoking behavior, and US Clinical Practice Guidelines discourage dieting while attempting to quit smoking. The current study tests an intervention designed to replenish depleted self-control strength by inducing positive affect. In a controlled randomized experiment, we examined the effect of resisting tempting sweets and then experiencing a positive affective induction on subsequent smoking behavior. Participants were 200 smokers recruited from the San Francisco Bay Area for a study on resisting temptations. Participants were tested once, individually, in sessions lasting one hour. Participants’ baseline exhared carbon monoxide (CO) levels were measured using a Bedfont smokerizer. In a 2x2 design, participants were then randomized to either (1) resist eating from a plate of cookies (high temptation) or from a plate of radishes (low temptation), and then (2) undergo a positive or neutral affect induction that involved either watching a humorous or neutral film clip or writing about a positive or neutral event. After the affect manipulation, participants were given a 10-min break, and then their CO levels were re-checked to determine if they smoked during the break. As predicted, those who resisted sweets were more likely to smoke during the break (60.4%) than those who resisted vegetables (42.4%), X² = 6.25, df = 1, p < .05. The interaction between depletion (food) and affect induction was also significant, F(2, 192) = 4.56, p < .05. Among those assigned to cookies, 73.5% smoked if they were in the neutral condition vs. 48.1% in the positive affect group. These findings support the self-control strength model and may have important implications for tobacco cessation interventions; if positive emotions can replenish self-control strength, this could increase successful smoking cessation attempts.

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PO55-48  TOBACCO AND ALCOHOL AS CONSUMPTION CONSTELLATIONS

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Segmentation is a commonly used approach by marketers in which target consumers are identified on the basis of demographics, geography, psychographics, and behavioural components. The usage situation may also be considered as a market segmentation variable, and tobacco firms recognize that products, such as coffee and alcohol, are often used concurrently with cigarettes. In the United States, cigarette sales peak during the summer months, June through August, and the identified seasonal smoking rates correspond with alcohol consumption patterns. In this study, tobacco industry documents, publicly accessible from litigation, were reviewed, which was complemented by a semiotic analysis of promotions that corresponded to the reviewed ad planning documents. First, by focusing on usage situations, we found that “social smokers” were identified by tobacco firms as target consumers who primarily smoke in settings of alcohol consumption. Such occasional smokers were likely to discount the personal relevance of health consequences from tobacco use, and they often did not identify themselves as addicted or as smokers. Second, we found that the complementarities of brands are strategies marketed on the basis of either their functional or symbolic properties. Tobacco products have been marketed with alcohol flavourings (e.g., Copenhagen Black), and several cigarette ads include pictorials encouraging the co-use of tobacco and alcohol. Moreover, the notion of “consumption constellations” reveals that two or more products consumed together can transmit lifestyle information about a consumer’s identity, given the symbolic interaction between a complement of products. Player’s and Molson Canadian serve as a case example of industry efforts to co-promote cigarettes and beer brands, in which their cultural identity and status are considered complementary (i.e., both brands were positioned as expressions of masculinity and patriotism). Future tobacco control initiatives should have a renewed focus toward recognizing the interplay of tobacco and alcohol product/brand groupings that are strategically meant to go together and form “consumption constellations”.

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PO55-49  PHARMACOKINETICS (PK) OF COTININE IN INFANTS AND YOUNG CHILDREN EXPOSED TO SECOND HAND SMOKE (SHS)

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Intro: Some infants and young children have been found to have urine cotinine levels higher than would be expected if these levels are due to SHS exposure and/or slow metabolism of cotinine. We are conducting a study to determine the pharmacokinetics of oral deuterium labeled cotinine, C-d4, in Caucasian, W, and African American, AA, infants and children. The goal of the study is to determine the contribution of cotinine metabolism to elevated pediatric cotinine levels, and to aid in the interpretation of cotinine levels in pediatric studies.

Methods: Health children exposed to SHS received oral doses of 0.05 mg/kg C-d4, after parental consent. Serial saliva and urine samples were collected for up to 10 days. Urine was assayed for C-d4 by LC-MSMS. Half-life, T1/2, Clearance, Cl, and Volume of distribution, Vd, were determined. The study will ultimately enroll 72 infants and children, balanced for race and gender, and stratified into 3 age cohorts between 2-84 months.

Results: Reported here are the urine results for the first 2 children to complete the protocol. One, #1, was an 11 month old AA male and the other, #2, a 27 mois, W female. They had the following C-d4 PK results; #1 – peak urine level of 88 ng/ml, T1/2 of 10 hrs, Cl of 4.2 ml/min, and Vd of 305 ml/kg; and #2 – peak urine level of 79 ng/ml, T1/2 of 14.9 hrs, Cl of 7.8 ml/min, and Vd of 837 ml/kg. C-d4 had no effect upon vital signs or behavior.

Discussion: These initial data indicate that some young children have cotinine half-lives similar to the adult average of 16 hours. Higher cotinine levels are likely due to greater intake of SHS, and not slower cotinine metabolism. The results of the completed study may eliminate cotinine metabolism as a cause of elevated cotinine levels associated with SHS exposure in the young.

Tobacco Related Disease Research Program, State of California.

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POS5-50  EFFECT OF AN ELECTRONIC NICOTINE INHALER ON CRAVINGS, WITHDRAWAL, ACCEPTABILITY AND NICOTINE DELIVERY

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Background and design: Randomised crossover trial to evaluate the effect of an electronic nicotine inhaler (ENI) on craving, withdrawal, acceptability and nicotine delivery in 40 adult smokers from New Zealand. Participants were randomized to a day’s use of each of the following (with a 3-day washout period between): Ruyan® ENI with nicotine (16mg) or placebo (0mg) capsules, Nicorette® inhalator, and their usual cigarette. Nine participants took part in a pharmacokinetic study. The primary outcome was change in craving, rated on a 10-point scale over 60 minutes measured as area under the curve. Secondary outcomes included withdrawal, serum nicotine, adverse events and acceptability. Statistical analyses were performed on an intention to treat basis.

Results: Over 60 minutes participants using 16 mg ENI experienced 0.82 units (95% CI. 0.25-1.38; p<0.01) less craving than when using 0 mg ENI. Cigarettes resulted in significantly less craving than other products. Among the other products, 16 mg ENI users gave the lowest ratings for irritability, restlessness, poor concentration and need for a cigarette but the differences were not statistically significant. ENIs were well-tolerated, acceptable and delivered nicotine at a faster speed (19.4 minutes) compared to inhalator (30 minutes). Maximal plasma concentrations were 0.9 and 1.8 ng/ml for the 16mg ENI and inhalator, respectively.

Conclusion: The ENI was as effective in reducing craving and other withdrawal effects as inhalator, was well-tolerated, acceptable with few adverse effects. Further studies are warranted to assess safety and ability of ENIs to help people quit smoking.

SBT Holdings Limited Beijing, Hong Kong, via Health NZ Ltd.

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POS5-51  EXPOSURE TO MOVIE SMOKING AND SUSCEPTIBILITY TO SMOKING AMONG NON-SMOKING NORWEGIAN 16-20 OLDS: A CROSS-SECTIONAL STUDY

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Background: Exposure to movie smoking has been shown to exert an indepen dent statistical effect on smoking initiation among adolescents, also after controls for relevant confounders (family influence, peer influence, individual traits). Yet, most of the empirical documentation of this effect stems from USA. A few studies from Mexico, Egypt and Germany have supported the American findings, suggesting a universal effect. However, a recent British study found no evidence of such media effect.

Objectives: This paper presents findings from a Norwegian study of exposure to movie smoking and susceptibility to smoking among non-smoking adolescents and young adults (aged 16-20). Is there a significant relationship between exposure to movie smoking and susceptibility to smoking after control for confounders? If yes, can this effect be explained by way of mediating positive attitudes to smoking?

Methods: Logistic regression is applied, using susceptibility to smoking (no/yes) as binary dependent variable. The paper makes use of measures previously applied in American and German studies, to replicate as closely as possible the theoretical and methodological approach of previous research.

Data: The data was collected between June and August 2008. The nationally representative sample consists of 576 non-smoking respondents aged 16-20. The respondents were recruited from a web panel of 60,000 respondents representative of the total Norwegian population, run by public opinion institute Synovate.

Results: There was no significant association between exposure to movie smoking and susceptibility to smoking, neither unadjusted nor adjusted for confounders. Nor were there significant associations between exposure to movie smoking and positive attitudes of smoking.

Discussion: The findings do not support the assumption that exposure to movie smoking fosters positive attitudes about smoking among Norwegian youths. Implications of the results are discussed.

No funding.

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POS5-52  WHO RELAPSES IN A SMOKING CESSATION PROGRAMME AND WHY?

Steven Graves* and Sabine Gradl

Objectives: Relapse is the common outcome when people try to quit smoking. Smoking relapse is defined as a total consumption of more than five cigarettes since the designated “Quit-Day”. Findings suggest that risk factors for relapsing are younger age, female gender, lower social economic status (SES), being unmarried, divorced or widowed and high nicotine dependence. Men seem to relapse more often in social situations in connection with positive and negative affect while women seem to relapse more often under stressful conditions and after weight gain. Little is known about relapsing participants of smoking cessation programmes outside clinical trials. The aim of this study is to remedy this short-com ing in exploring some critical features of relapsing participants.

Methods: The study sample consists of 35 participants of a German smoking cessation programme. The programme is based on cognitive behavioural therapy. In a longitudinal study, the sample was randomly selected from an overall popula tion of 2560 adult smokers who attended the programme in 2008. The participants were investigated at three measurement times: At baseline in the first session (t0), at the end of the course (t1) and after a six-month follow-up (t2). Data from participants whose total cigarette consumption was between one and five cigarettes was excluded.

Results: The mean period between the quit day and relapse is 44 days. The group of unmarried, divorced and widowed participants relapsing significantly more often. Asked for high risk situations 54.5% of the participants were drinking coffee while relapsing. They are relapsing more often in situations when they are alone rather than being in company. Participants have feelings of inner emptiness and tension when relapsing rather than the feeling of rewarding themselves with a cigarette.

Conclusions: Participants in smoking cessation treatment programmes should be prepared for an active lifestyle with social activities. They also should be trained in successful coping strategies to prevent negative affect and stress.

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POS5-53  A SAMPLING SURVEY ON THE DEGREE OF NICOTINE DEPENDENCE AMONG BEIJING SMOKERS

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To understand the degree of nicotine dependence in Beijing smokers, a ques tionnaire survey was conducted focusing on the six questions of the Fagerström Test for Nicotine Dependence (FTND) and their quit attempts before was conducted from October 2007 to March 2008. From the multi-stage random sampling questionnaire survey for residents aged 15 years and over from 6 selected districts (Dongcheng, Xuanwu, Chaoyang, Shijingshan, Shunyi, and Changping District) in Beijing, we identified 1034 male smokers out of 2496 male residents and 158 female smokers out of 2693 female residents from 5189 smokers who provided effective questionnaires (5489 questionnaires totally); the ratio of sampling was 1/2100. The smoking rate was 41.4% for males and 5.9% for females. The median FTND score was 3.1 for male smokers and 2.4 for female smokers; 48.8% smokers had no previous quit attempts. We concluded that the degree of nicotine dependence is low among Beijing smokers; almost half of smokers have not attempted to quit before. Smoking cessation campaign is necessary.

This study was funded by Pfizer Inc.

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**POS5-55**

**PRELIMINARY EVIDENCE THAT CIGARETTE SMOKING PREDICTS NEW-ONSET ALCOHOL AND CANNABIS USE DISORDERS FOLLOWING A FIRST-EPISTEME MANIC EPISODE IN ADULTS AND ADOLESCENTS WITH BIPOLAR I DISORDER**

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Background: Alcohol and cannabis use disorders are highly prevalent among individuals with bipolar disorder and are associated with a more severe course of affective symptoms as well as poorer treatment adherence and outcome. Developmental models of substance abuse and dependence suggest that cigarette smoking is an independent risk factor for problematic alcohol and cannabis use in the general population, but, to our knowledge, the generalizability of such findings to individuals with bipolar disorder has not yet been evaluated using a prospective study design.

Method: Participants were 59 adolescents (n=45; 76.3%) and adults (n=14; 23.7%) with bipolar I disorder who did not meet lifetime criteria for an alcohol or cannabis use disorder at the time of first hospitalization for mania based on the Structured Clinical Interview for DSM-IV (SCID). Symptoms of mood and substance use disorders were assessed longitudinally for up to 233 weeks (M=101.2; SD=64.1) post-hospitalization as part of a larger study of co-occurring substance abuse and bipolar disorder.

Results: Thirteen (22.0%) of the 59 participants developed either an alcohol or cannabis use disorder during the post-hospitalization follow-up period. After controlling for variability in the length of follow-up, being a smoker at the time of hospitalization predicted development of a new-onset alcohol or cannabis use disorder. The risk of developing an alcohol use disorder increased by 2.6% per year, whereas the risk of developing a cannabis use disorder in the 30 days prior to hospitalization, and post-hospitalization course of mood disorder symptoms were not significant predictors.

Discussion: A prospective pilot study provide evidence that cigarette smoking predicts subsequent development of alcohol and cannabis use disorders among individuals with bipolar disorder. Efforts to prevent alcohol and cannabis misuse in this population should be targeted toward cigarette smokers as an at-risk group.

This work was supported, in part, by NIMH grants MH85170 and MH63373.

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**POS5-56**

**AN OFFSPRING OF TWINS APPROACH TO TESTING FOR GENETIC AND ENVIRONMENTAL INFLUENCES ON ADOLESCENT AND YOUNG ADULT SMOKING OUTCOMES**

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Background: Despite increased barriers to access, over a quarter of adolescents and young adults with bipolar disorder and are associated with a more severe course of affective symptoms as well as poorer treatment adherence and outcome. Developmental models of substance abuse and dependence suggest that cigarette smoking is an independent risk factor for problematic alcohol and cannabis use in the general population, but, to our knowledge, the generalizability of such findings to individuals with bipolar disorder has not yet been evaluated using a prospective study design.

Method: Participants were 59 adolescents (n=45; 76.3%) and adults (n=14; 23.7%) with bipolar I disorder who did not meet lifetime criteria for an alcohol or cannabis use disorder at the time of first hospitalization for mania based on the Structured Clinical Interview for DSM-IV (SCID). Symptoms of mood and substance use disorders were assessed longitudinally for up to 233 weeks (M=101.2; SD=64.1) post-hospitalization as part of a larger study of co-occurring substance abuse and bipolar disorder.

Results: Thirteen (22.0%) of the 59 participants developed either an alcohol or cannabis use disorder during the post-hospitalization follow-up period. After controlling for variability in the length of follow-up, being a smoker at the time of hospitalization predicted development of a new-onset alcohol or cannabis use disorder. The risk of developing an alcohol use disorder increased by 2.6% per year, whereas the risk of developing a cannabis use disorder in the 30 days prior to hospitalization, and post-hospitalization course of mood disorder symptoms were not significant predictors.

Discussion: A prospective pilot study provide evidence that cigarette smoking predicts subsequent development of alcohol and cannabis use disorders among individuals with bipolar disorder. Efforts to prevent alcohol and cannabis misuse in this population should be targeted toward cigarette smokers as an at-risk group.

This work was supported, in part, by NIMH grants MH85170 and MH63373.

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**POS5-57**

**THERAPY STATUS AS A PREDICTOR OF USE OF COMPLEMENTARY MEDICINE IN COPING WITH A CANCER DIAGNOSIS: THE PERSPECTIVE OF LEARNED INDUSTRIOUSNESS THEORY**

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According to Learned Industriousness theory (Eisenberger, 1992), the propensity to exhibit high effort and task persistence results from a history of positive reinforcement for these behaviors. Because smoking is a low-effort strategy for coping with stress, and quitting is a high-effort, aversive task, Brandon et al. (1996) reasoned that smoking status should be associated with learned industriousness. We investigated this hypothesis by examining whether cancer survivors’ use of complementary treatment methods (CMs) – which we consider evidence of persistent and effortful coping with their cancer diagnosis – is associated with smoking status. Participants were 3,670 survivors of 10 cancers who participated in the American Cancer Society’s Study of Cancer Survivors-(SCS)-1, a nationwide, population-based quality-of-life study. Survivors were divided into 3 groups: never smokers, former smokers, or current smokers. Overall, 10.7% of survivors were current smokers, 9.9% were former smokers, and 79.4% were never smokers. The majority was under the age of 65, 59.2% were women, 62.2% had a high school education or less, 90% were white, and 63.7% had a stage 1 diagnosis. After controlling for socio-demographic variables and cancer type and severity, logistic regressions indicated that compared to never smokers current and former smokers were less likely to use Mind-Body strategies (e.g., meditation, hypnosis, prayer), and current smokers were less likely to use Biologically-based Practices (e.g., herbal therapy, vitamins) (p<.05). Current smokers were also less likely to use Whole Medical Systems (e.g., acupuncture, homeopathy) (p<.001) and Energy Medicine (e.g., Tai-Chi) compared to former smokers (p<.05). Current smokers’ lower use of CMs is consistent with predictions from learned industriousness theory. If lower use of CMs is associated with reduced quality of life among cancer survivors with a cancer diagnosis, then current smokers may be at greater risk for poorer treatment outcomes in addition to those caused by smoking. Strategies to increase effortful coping and persistence in treatment among cancer survivors who are smokers may be warranted.

This study was supported by a grant from the American Cancer Society.

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POSS-58 EXPERIENCE FROM THE IMPLEMENTATION OF THE TEXAS YOUTH TOBACCO AWARENESS PROGRAM

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Introduction: The Texas Youth Tobacco Awareness Program (YTAP) is a promising community-based approach to assist smoking youth with life transitions & tobacco quitting. The purpose of this study was to examine the level of implementation of the YTAP program in a broad effectiveness trial.

Sample & Instrument: 55 valid program facilitator e-mail addresses were provided. 24 survey responses were obtained. The current questionnaire was a modified version of an earlier self-report implementation instrument. Procedures: The YTAP facilitators were contacted by e-mail, informed of the study, and sent an Internet address for accessing the questionnaire via the SurveyMonkey. The survey was available on the web-link for approximately ten days.

Analysis: Descriptive and non-parametric analyses were conducted on the implementation variables of interest.

Results: The profile of the modal participant follows: he/she was a YTAP veteran, teaching the program in one location, and offering 5-7 classes through-out the year. The modal facilitator had implemented high conformity to the design of the YTAP materials, although adherence varied among the four sessions. Several relationships were identified between facilitator background characteristics & implementation variables, including the total number of YTAP classes taught in a year. The model was associated with curriculum content implementation, passing implementation fidelity (p<.01), & rating of a key program resource video (p<.05). In each instance, the more classes taught the higher the standard; fewer classes resulted in lower ratings.

Discussion: The delivery & ultimate effectiveness of any public health program is linked to its level of implementation. Facilitator patterns of implementation demonstrated a high degree of fidelity across YTAP sessions, format, and resources. Several correlations to greater implementation were identified and should be promoted to enhance fidelity. Moreover, a comprehensive implementation network to support promising programs must be defined and acknowledged.

This work was funded by the Texas Department of State Health Services.

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POSS-59 SMOKING AND SUICIDE RELATED OUTCOMES: LONGITUDINAL ANALYSIS FROM THE NATIONAL EPIDEMILOGIC STUDY ON ALCOHOL AND RELATED CONDITIONS (NESARC)

Lirio S. Covey, Ph.D.*, Ivan Berlin, M.D., Ph.D., Keng-Han Lin, M.A., and Carlos Blanco, M.D., Ph.D., Columbia University Medical Center

Cigarette smoking is known to increase risk for suicide related outcomes (SRO) but the effect of changes in smoking status, e.g., ex-smoking, on SRO is unknown. Using longitudinal data from Waves 1 and 2 of the NESARC, we assessed the relationship of ex-smoking (past 12 months) and other changes in smoking status, e.g., current smoking, on SRO. Wave 2 data were obtained from 4073 adult respondents who answered the SRO questions in both waves. The dependent variable was incident SRO in Wave 2. The main predictor was smoking status at Waves 1 and 2 categorized as: a) non-smoker at both waves (NS-NS), b) non-smoker at Wave 1 – current smoker at Wave 2 (NS-CS), c) current smoker at Wave 1 – ex-smoker at Wave 2 (CS-EX), d) current smoker at both waves (CS-CS), e) ex-smoker at both waves (EX-EX), f) ex-smoker at Wave 1 - Current Smoker at Wave 2 (relapsers) (EX-CS). Multiple logistic regression analysis showed that, in comparisons with nonsmokers at both Waves 1 and 2, incident SRO was increased for incident Wave SRO, adjusted for confounders (CS-EX OR=2.70, 95% CI=1.53-4.77; CS-CS OR=1.31, 95% CI=1.06-1.63), and EX-EX (OR=2.77, 95% CI=1.32-5.62). ORs for CS-EX (1.12) and EX-EX (1.07) were not significant. The data indicate increased risk for incident SRO in Wave 2 with: incident smoking at Wave 2, continued smoking, and relapse to smoking, but no increased risk for incident ex-smoking (in Wave 2) or sustained ex-smoking. Consistent trends were observed for nicotine dependence (ND): compared to no ND, progression to ND and persistence of ND, but not remission of ND, were associated with the higher Wave 2 incidence of SRO. Other independent predictors of incident SRO in Wave 2 were previous (Wave 1) SRO, lifetime psychiatric disorder, unemployed status, being formerly married, and Hispanic race/ethnicity. SRO risk decreased with older age. The data suggest that current smoking and nicotine dependence increase risk of SRO. Ex-smoking (past 12 months)did not increase 3-year risk of SRO; the relationship of shorter duration of abstinence with SRO risk remains to be known.

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POSS-60 CHANGES IN THE PREVALENCE OF SELF-REPORTED PURCHASING OF CIGARETTES ON FIRST NATIONS (ABORIGINAL) RESERVES IN ONTARIO, CANADA

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Objective: To determine changes over two years in the prevalence of purchasing contraband cigarettes on First Nation reserves in Ontario, its share of total reported cigarette consumption among Ontario current smokers and loss of tax revenue.

Methods: Data were analyzed from the 2007/8 Ontario Tobacco Survey (OTS)/response rate 59%, a cross-sectional survey in which 1,378 adult smokers were interviewed about their purchasing behaviour. Prevalence of purchasing cigarettes on reserves (recent, usual and ever) and its share of total reported cigarette consumption were assessed with descriptive statistics. Estimated total cigarette purchases on reserves multiplied by the then prevailing tax rates gave the loss of tax revenue. Changes of these estimates from 2005/6 OTS were assessed taking into account the complex survey sampling design.

Results: In 2007/8, 28% of current smokers reported recently (past 6 months) purchasing cigarettes on reserves, 12% reported usually buying and 37% reported ever buying. These rates were not statistically different from 2005/6. However, the estimated total packs of cigarettes bought on reserves between January 2006, and June 2008 increased by 41% to 53.8 million packs in 2007/8 (p<0.010), the loss of tax revenues increased by 45% to Can$210.9 million, and cigarettes bought on reserves as a percentage of total reported cigarette consumption among Ontario current smokers increased by 61% to 27% (p=0.000).

Conclusions: While there was no change in the prevalence of recent, ever or usual purchasing, the amount of cigarettes purchased on reserves and its share of total reported cigarette consumption increased greatly between 2005/6 and 2007/8. This suggests that more contraband cigarettes are being purchased for resale or distribution to other smokers. Contraband cigarettes, a global phenomenon accounting for almost 6% of world-wide consumption, undermines the effectiveness of tobacco taxation in reducing smoking. Where indicated, governments should implement anti-contraband measures, as recommended by the Framework Convention on Tobacco Control, to ensure that tobacco taxation achieves its intended health benefits and tax revenues are protected.

This research was conducted at the Ontario Tobacco Research Unit, which receives funding form the Ontario Ministry of Health Promotion.

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POSS-61 OROS-METHYLPHENIDATE, A TREATMENT FOR ADHD INCREASED ABSTINENCE AMONG MIGNORITY BUT NOT WHITE-NONHISPANIC SMOKERS WITH ADHD: A PLACEBO-CONTROLLED TRIAL

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Attention Deficit Hyperactivity Disorder (ADHD) is a neuropsychiatric condition associated with increased cigarette smoking and decreased smoking cessation. Similarity in neurobiological underpinnings of ADHD and nicotine dependence has raised speculation that ADHD medications could be efficacious smoking cessation aids. A trial was conducted to test the ability of OROS-methylphenidate (MPH) compared to placebo (Pbo) for improving smoking cessation among adult smokers with ADHD when added to standard treatment (nicotine patch and counseling). The MPH effect on smoking cessation among 51 nonwhite (including any Hispanic) (NW/H) compared to 202 white non-Hispanic (Wh) study participants was investigated. The dependent variable was continuous abstinence, verified at weekly visits by carbon monoxide monitoring and urine screening weeks from quit day to end of treatment. Grouped into MPH-NW/H, Pbo-NW/H, MPH-Wh, and Pbo-Wh, participants yielded continuous abstinence rates of 42.9%, 13.3%, 23.1%, 23.5%, respectively, indicating a positive effect of MPH versus Pbo among NW/H (p<0.05) but not among Wh. ADHD symptoms, tobacco withdrawal symptoms, and craving declined during the study. Greater declines for the latter variables occurred with MPH treatment; but the largest effect of MPH compared to Pbo was seen in the NW/H subgroup, for craving. Mixed effects analysis (adjusted for the treatment*race/ethnicity interaction, demographics, smoking history, and changes in withdrawal and ADHD symptoms) suggested that craving change mediated the differential effect of MPH by race/ethnicity. A positive response to the same treatment among racial minority but not majority adults, who are at greatest risk and potentially clinically meaningful outcome that warrants further investigation.

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Adenocarcinoma as a percentage of all lung cancer has increased over time and this increase has been attributed to changes in cigarette design. We use five-year birth cohort specific estimates of smoking behaviors and a model of lung cancer risk derived from the ACS CPS I data to estimate the expected rate of lung cancer by birth cohort and compare those estimates to actual US lung cancer mortality by birth cohort. Risk data from CPS I are based on cigarettes smoked prior to 1972, and these risk estimates progressively underestimate actual US lung cancer mortality between 1970 and 2000 culminating in a 50% underestimate. This underestimate can be eliminated by including a simple scaling term for the duration of smoking cigarettes manufactured after the mid 1960s. Birth cohort specific lung cancer incidence by tissue type was examined using the SEER data and the same risk models scaled to the percentage of all lung cancer represented by that type. Squamous cell carcinoma incidence rates by birth cohort were well predicted by the model without any adjustment for cigarettes smoked after the mid 1960s suggesting that there has been no increase in risk of smoking over time for squamous cell cancer. Incidence rates for adenocarcinoma were progressively underestimated suggesting that the risk of smoking for adenocarcinoma has increased dramatically over time. These data suggest that up to one half of current lung cancer may be attributable to changes in cigarette design and corresponding that current lung cancer rates might be reduced by up to 50% through regulatory control of cigarette design and composition.

POS5-62 IS THE INCREASE IN ADENOCARCINOMA A RESULT OF CHANGES IN CIGARETTE DESIGN?
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POS5-64 TIME PERSPECTIVE AS A PREDICTOR OF SMOKING STATUS: FINDINGS FROM THE ITC SCOTLAND, FRANCE, GERMANY, CHINA, AND MALAYSIA SURVEYS
Michelle Costa, B.Sc.**, Joanna Cohen, Ph.D.**, Michael Chaiton**, Paul McDonald, Ph.D.**, Roberta Ferrence, Ph.D.**, 'Dalila Lana School of Public Health, University of Toronto; 'Ontario Tobacco Research Unit; *Department of Health Sciences and Gerontology, University of Waterloo

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POS5-63 "HARDCORE" DEFINITIONS AND THEIR APPLICATION TO A POPULATION-BASED SAMPLE OF SMOKERS
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POS5-65 PATTERNS AND PREDICTORS OF POLYTABACCO USE IN NON-DAILY TOBACCO USERS
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Cigarette smoking is the most common route of tobacco administration and has been the primary focus for the majority of tobacco research. Cigarettes, however, are only one of several tobacco products that are commercially available to consumers; other forms of tobacco can include smokeless tobacco, shisha (i.e., water pipes), traditional pipes, cigars, and cigarillos. These alternative tobacco products may be particularly appealing to a sub-group of tobacco users, non-daily consumers. Understanding health-relevant behavior because it measures the extent to which individuals think that their current behaviors will have consequences for the future (Hall & Fong, 2003, 2007). The importance of time perspective in tobacco use has been demonstrated in the domain of cessation: smokers with a stronger future orientation are more likely to attempt to quit (Yong et al., 2005). The present study examined whether time perspective is a predictor of smoking status using data from International Tobacco Control (ITC) Surveys in five countries where large population samples of both smokers and non-smokers were surveyed: Scotland, France, Germany, China, and Malaysia. Analyses across all five countries found that the prevalence of future orientation was significantly higher among non-smokers (66%) than it was among smokers (50%), chi-square(1, N = 14,425) = 128.1, p < .001. This bivariate relationship between time perspective and smoking status held in a multivariate analysis. After controlling for country, age, sex, income, ethnicity (language in France), and education, those who were future-oriented had 36% greater odds of being a non-smoker than a smoker (95% confidence interval: 1.25 to 1.48, p < .001). Looking at the differences across countries, time perspective had a significant relation with smoking status in all countries except China (Odds Ratio=1.03, n.s.). This relationship was significantly stronger in Germany (OR=1.99, p<.001), than it was in Scotland (OR=1.47, p<.05), France (OR=1.29, p<.05), and Malaysia (OR=1.89, p<.001). This study, which is the first exploration of time perspective and smoking in non-Western countries, further establishes time perspective as an important construct in tobacco research. These findings also have implications for guiding smoking cessation strategies and for designing more effective population-level tobacco control campaigns.

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This work was completed as part of a University of Toronto M.H.Sc. student practicum at the Ontario Tobacco Research Unit, which receives funding from the Ontario Ministry of Health and Long-Term Care.

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Background: The smoking prevalence of female smokers in Hong Kong has increased steadily from 2.7% in 1990 to 3.6% in 2008, and the greatest increase was found in younger women. 98.4% of the female smokers have not tried smoking cessation counseling before. A majority of them would not try the cessation services in the near future. We set up a “Women Against Tobacco Taskforce” (WATT) together with local woman organizations in November 2006 to provide a gender-specific smoking cessation program targeting female smokers in the community.

Objectives: To examine the effectiveness of the first gender-specific smoking cessation counseling program to female smokers in Hong Kong.

Methods: Female smokers were recruited via our promotions and referrals from the WATT organizations. Nurses trained in smoking cessation counseling provided intensive gender-specific face-to-face or telephone smoking cessation counseling at baseline, 1 week and 1 month. Smoking profiles and quitting status were assessed at 3- and 6-month via telephone.

Results: Up to January 2009, 243 female smokers who had received our counseling were available for 6-month follow up. Their mean age was 35.5±10.4 years, and 93.8% of them had secondary school education or above. On average, they had smoked for 17.2 years and consumed 13.9 cigarettes per day. 35.8% had severe nicotine dependence and 23.8% had not tried to quit smoking before. By intention-to-treatment analysis, the self-reported 7-day point prevalence quit rate at 6-month was 24.7% (95% CI:243). Exclusive quitters, the ones who had not smoked for one year, the point prevalence consumption had significantly decreased from 15.3±9.1 at baseline to 9.9±6.7 at 6-month (p<0.01).

Conclusions: Our gender-specific smoking cessation service had achieved a high quit rate and significantly reduced daily cigarette consumption among the participating female smokers. This quit rate compares favorably to a smoking cessation clinic for all smokers with counseling and NRT (27%) but higher than a Quitline without counseling in Hong Kong. This programme suggests the feasibility and potential of promoting gender-specific cessation service in the community.

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China has the largest smoking population in the world. Smoking annually kills about one million people and the death toll is increasing rapidly. However, health care professionals (HCPs) have limited training in smoking cessation and they play no role in tobacco control advocacy. This paper examines the associations between the smoking behavior of adolescents’ friends and family (parent, sibling, grandparent, teacher, and cousin) with their own smoking behavior.

METHODS: Cross-sectional survey data from 880 American Indian adolescents through- out urban and rural areas of California were collected with a 40-minute paper and pencil tobacco survey. Questions included lifetime and past-month smoking behavior, peer and family smoking, and exposure to second-hand smoke in home, car or outdoor areas. Youths between the ages of 13-19 years of age (mean age=16.44%) were recruited from approximately 50 different tribal youth organizations and cultural events. Logistic regression was used to determine the associations of lifetime and past-month smoking to interpersonal and environmental influences.

RESULTS: Respondents were more likely to report lifetime and past-month smoking if they had friends or lifetime OR=3.01 (2.18, 4.16), past-month OR=5.41 (3.36, 8.69) or cousins (lifetime OR=1.42 (1.02, 1.97), past-month OR=1.66 (1.13, 2.44)) who smoked cigarettes. However, having one or more grandparents who smoke was negatively associated with past-month smoking (OR=0.65 (0.43, 0.98)) and marginally negatively associated with lifetime smoking behavior (OR=0.71 (0.49, 1.01)). Additionally, being in the same room with someone who was smoking OR=1.63 (1.04, 2.56) or riding in a car with someone who was smoking (OR=1.53 (1.01, 2.01)) associated with past month smoking.

Conclusions: It is important to address interpersonal and environmental influences to smoking in prevention programs for American Indian adolescents and to understand the important role that family members (including in this case grandparents) in adolescent smoking, regardless of grandparents smoking status.

Tobacco Related Disease Research Program.
A ONE-MONTH STUDY TO EVALUATE BIOMARKERS OF EXPOSURE AND EFFECT IN SMOKERS SWITCHING FROM CONVENTIONAL CIGARETTES TO AN ELECTRICALLY HEATED CIGARETTE SMOKING SYSTEM

Claire Martin Leroy1, Kataryzna Jarus-Dżiedzic, Jacek Ancrewicz, Mark Bentley, Dirk Lindner, John Magnette, and Hugh Browne

Previous studies have demonstrated reductions in exposure to selected smoke constituents in smokers who switch from conventional cigarettes (CC) to an Electrically Heated Cigarette Smoking System (K6) under controlled smoking conditions. The aim of this study was to make a preliminary investigation of changes in a variety of candidate biomarkers of effect (BoExp) and exposure (BoExp) in subjects after smoking K6 cigarettes for one month under real-life conditions. This clinical investigation was a single-centre, randomised, open-label, two-arm study. Caucasian smokers aged from 30 to 60 years were enrolled and randomised to one of two groups: those who would continue to smoke conventional cigarettes (CC) and those who would switch to smoking the K6 cigarette for one month. A selection of BoExp and BoEffect in blood and urine were compared between study groups at study end. This study was conducted in Poland from October 2007 to April 2008 in 388 smokers and 399 non-smokers. Of the 338 subjects enrolled, of which 316 were randomised to either the CC or K6 smoking arm, 237 subjects were smokers who completed the study and contributed data. There were some differences between the BoExp and BoEffect between the two groups. There were several explanations for the biomarkers for which no differences were detected. This study indicates that it is feasible to detect significant changes in certain biomarkers of effect on switching to the K6 product within a 1-month period. Thus, inclusion of such BoExp in clinical studies can be a valuable component of an integrated product risk assessment framework.

Philip Morris Products S.A.

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HIGHER RATES OF SMOKING EXPERIMENTATION AMONG U.S. RURAL YOUTH COMPARED TO STATE AND NATIONAL NORMS

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Middle and high school youth often engage in health-risk behaviors. Typically, rural youth have been considered more at risk for health behavior issues than their urban counterparts. However, these studies are based on information gathered from surveys and may not include specific data on rural youth behavior. This descriptive research explored specific measures of the Youth Risk Behavior Surveillance System (YRBSS) to include participation in health-risk behaviors of tobacco, alcohol, and marijuana use. Subjects (N=263) were 7th and 8th grade rural high school students from the southeastern United States (U.S.). Youth were males (N=115; 44%) and females (N=148; 56%), with 83% (N=217) being African American (AA). Mean age of the subjects was 13.07 (SD 0.77); Z-tests were used to test if the proportion in the rural sample was different from the national and state specific YRBSS data overall and within ethnicity and gender. In examining the school specific and YRBSS data overall (8th grade), the 7th and 8th grade rural high school students had higher rates of ever tried smoking overall (0.340 vs. 0.142; p<.0001); and among males (0.452 vs. 0.164; p<.0001), females (0.252 vs. 0.119; p<.0001), AAs (0.324 vs. 0.125; p<.0001) and Caucasians (0.472 vs. 0.144; p<.0001) the rural younger sample had higher rates than the YRBSS overall. Both alcohol and marijuana use were lower in the rural sample than the YRBSS overall data and among males, females, and both ethnicities (p<.03). Compared to the state specific YRBSS, the rural sample also had higher rates of ever tried smoking overall (0.340 vs. 0.145; p<.0001) and among males (0.452 vs. 0.182; p<.0001) and females (0.252 vs. 0.107; p<.0001). Based on these comparisons, 7th and 8th grade youth in the rural south participate in the health-risk behavior of trying tobacco use at a greater rate than their urban counterparts. Both smoking prevalence in school students (9th-12th) in their own state and nationally as well. Effective socio-cultural and tailored interventions are needed to prevent the health-risk behavior of tobacco use and promote healthy lifestyle choices in middle school, rural southeastern youth.

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DISPARITIES IN FLAVOR AND SMOKELINESS OF TOBACCO USE BEHAVIORS BY YOUTH MINORITY POPULATIONS IN MARYLAND

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The popularity of flavored cigarettes, called “bidis” or “beedies,” and smokeless tobacco among youth in the U.S. has grown recently. Flavored cigarettes are perceived as candy-like, less expensive, and safer and more natural than regular cigarettes. Bidi smokers have much higher risks of heart attack, chronic bronchi- tis, and some cancers than non-smokers. This paper presents data from the 2006 Maryland Youth Tobacco Survey, one of the largest tobacco surveys in the nation (308 schools, n=82,500, 6th-grade-12th grade). Findings show notable racial/ethnic disparities (sample included 1969 American Indian/Alaskan Natives, 3226 Asians, 20739 Blacks, 3898 Hispanics, 1015 Native Hawaiian/Pacific Islanders, 49397 Whites, and 1716 Missing race/ethnicity). Flavored cigarette use was high- est among Asian smokers (56.8%) followed by Native Hawaiian/Pacific Islander smokers (42.2%) and non-smokers (42.2%) greater than females (34.3%). NHPI males (25.5%) and AI males (13.7%) in high school were the most likely to use bidis with much higher rates in 12th than 11th grade. NHPi (11.5%) and AI (7.9%) were most likely to be smokeless tobacco users, with males (52.9%) and females in high school youth were also the most likely to use smokeless tobacco. Results can be used to improve understanding of flavored and smokeless tobacco use among minority populations who are at high risk and suffer disproportionately from tobacco-related illness and death. Findings will be useful in designing minority tobacco use prevention and cessation programs.

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EXTENSION OF LINKAGE RESULTS FOR NICOTINE DEPENDENCE AND NICOTINE WITHDRAWAL IN FINNISH FAMILIES

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Genetic effects explain around half of the variation in nicotine dependence and withdrawal. In the current NAG (Nicotine Addiction Genetics) study of Finnish and Australian families we aim at further understanding of the biology of these traits by localizing and identifying underlying genes. Our previous genome-wide linkage studies have initially pinpointed the chromosomal locations of various aspects of smoking behavior. By utilizing 153 Finnish twin families with a total of 505 individuals, Pergadia et al. found genome-wide significant evidence for a locus on chromosome 11 influencing DSM-IV nicotine withdrawal (NW), while Loukola et al. found that chromosomes 7 and 11 may harbor genetic variations affecting nicotine dependence (ND). Here, we aimed at confirming these findings and genotyped 211 additional Finnish families (800 individuals) with 17 microsatellite markers (three markers on chr9, nine on chr7, three on chr10, and two on chr11), which were selected based on the earlier results. In a combined analysis, a total of 1266 individuals belonging to 355 families, specifically ascertained for smoking, were included. Among them, 51% and 54% were classified as nicotine dependent by the Fagerström’s Test for Nicotine Dependence (FTND) and the DSM-IV criteria, respectively. Subjects were carefully examined for extensive smoking related phenotypic traits. We performed non-parametric linkage analysis with MERLIN using FTND and DSM-IV criteria for ND and DSM-IV criteria for NW. Initial analyses yielded a NW linkage signal on chr11 (at 0.1 cM, singlepoint LOD=2.60, p=0.0003). Interestingly, linkage to FTND was observed with the same marker (singlepoint LOD=2.05, p<0.001). Relevance of these results is highlighted by the fact that this area of chr11 harbors candidate genes for NW and ND such as DRD2 and CHRNA10. The most significant linkage signal was detected for DSM-IV ND on chr7 (at 99.9 cM, multipoint LOD 2.83, p<0.0002), emerging in females only. These results are consistent with our previous findings and warrant further studies of these chromosomal regions.

Data collection was supported by a NIH grant DA12854 to PAFM and by Academy of Finland grants to JK. The study was funded by Doctoral Programs of Public Health (UIB) and the Academy of Finland Center of Excellence in Complex Disease Genetics. MLP was supported by a NIH grant DA019951. AL was supported by the Academy of Finland post-doctoral fellowship.

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TOBACCO USE SEVERITY IN DRUG DEPENDENT PATIENTS

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Background: Tobacco dependence among drug dependent patients is highly prevalent and deadly. Rates of tobacco dependence among abusers of illicit substances and alcohol in substance use disorder treatment programs are reported in the range of 85-100%. These patients are likely to be heavy smokers and are more nicotine dependent. Further, these patients are at devastatingly high risk of morbidity and mortality from tobacco related illnesses like cancer, chronic obstructive pulmonary disease cardiovascular diseases etc.

Objectives: To assess severity of dependence in treatment seeking drug dependent patients.

Methods: Tobacco use profile and severity of dependence as analyzed by the Fagerström’s Test for Nicotine Dependence (FTND), of 197 consecutive patients attending the Tobacco cessation clinic of a drug de-addiction center were analyzed.

Results: Majority of the patients were males (98.5%), with most (31.6%) being in the 31-40 yrs age group. Most were Hindus (69.4%) and were married (78.2%). 23.4% were illiterate and 20.4% were presently unemployed. Drug use profile revealed that opioid dependence was seen in 64% of these patients with heroin being the most commonly abused opioid. 37.1% of these patients currently used alcohol and 13.7% of these patients were current users of cannabis. Tobacco related profile revealed that 49.7% of patients used tobacco in smokable form, 13.8% reporting only smokeless tobacco and 36.4% of patients reported consumption of both smokable and smokeless tobacco products. Severity of dependence — 14.8% of patients had medium levels and 52.1% had high to very high level of tobacco dependence as measured by FTND. Further, FTND scores were significantly correlated with age of onset (r = -0.241, p<.01) and average dose for Bidi users (r = -0.205, p<0.05).

Conclusions: Given their high severity of dependence, in addition to addressing the primary drug of abuse, it is important to systematically assess and treat tobacco dependence in these drug dependent patients.

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TAR AND NICOTINE LEVEL IN CIGARS IN SINGAPORE

Nuan Ping Cheah*

Defined as any roll of tobacco wrapped in leaf tobacco, cigars age for about one year and are fermented in a multi-step process that take from 3-5 months. Cigars are best preserved in humidors kept at specialized conditions — 70% relative humidity (RH) and 21°C. The filler, binder and wrapper are what give cigars their distinct characteristic. Their sizes and shapes, collectively known as vitola, often categorize them. The most common shape is the parejo, having a cylindrical body and a round cap. Cigars contain 5-17 grams of tobacco as compared to <1 gram per cigarette. Some premium cigar can contain as much tobacco as in a whole pack of cigarettes! Of the two dealers “The Oaks Cellers Pte Ltd” and “Habanos the Fine Cigar People” surveyed, about 15 brands of cigars are available in the market in Singapore, compared to over 100 brands available worldwide. Grown primarily in the tropical regions of the world, these cigars are manufactured mainly in Brazil, Cuba, Dominican Republic, Mexico and the United States. In current statistics done by the Health Promotion Board in year 2004,12.6% of Singapore’s population are smokers. Till date, no survey regarding percentage of cigarette smokers compared to cigarette smokers. However, Singapore Customs imports approximately 2,073,070kg (year 2005) of tobaccos annually, of which 94% are cigarette and 0.2% cigarette products. Inferentially, we can estimate that for every 1,000 smokers, 2 are cigar smokers.

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POSS-77

DISRUPTIVENESS, PEER EXPERIENCES, AND ADOLESCENT SMOKING: A LONG-TERM LONGITUDINAL APPROACH

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Abstract: This study examined links of peer experiences (i.e., social status and affiliation with disruptive peers) throughout childhood with respect to adolescent smoking trajectories, after controlling for childhood disruptiveness. Specifically, we tested four models regarding links of peer experiences and deviant behaviour at age 6.

Design: This prospective community sample. Participants: A total of 312 children, aged 6.17 years at baseline. Measurements: Growth parameters of own disruptive behaviour, deviant behaviour of friends, and social status measured at age 7-12 as predictors of smoking assessed at ages 13-15, while controlling for own disruptive behaviour at age 6.

Findings: We found three groups with distinct profiles of smoking. One group displayed hardly or no smoking at all; a second group showed a trajectory of increased smoking; and a third group that initially showed high smoking rates, and increased in smoking intensity over time. Results support the assumption of the Selection model that the link between disruptive peers and smoking is spurious and due to shared variance with own easily disruptiveness. Moreover, support was found for the Popularity-Socialization model supporting the assumption that age-related increases in social status are associated with smoking.

Conclusions: The findings emphasize that early disruptiveness is predictive of later smoking. In addition, it was shown that smoking becomes less deviant over time in line with group norms. Future prevention programs should emphasize the need to change these norms.

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POSS-79

INEQUITY IN HEALTH – A ANALYSIS OF FACTORS INFLUENCING REAL LIFE QUIT-RATES OF SMOKING CESSATION INTERVENTION

Hanne Tonnensen* and Mette Rasmussen

Tobacco Controlling Policies and Interventions, e.g., smoking bans and smoking cessation (SC) to reduce smoking prevalence and prevent secondary environmental smoking make immediate results in community health. However, the success of these interventions may depend upon factors like the level of education and occupation, smoking history and nicotine dependence.

Objective: Utilizing a national database the objective of the study was to analyse the different socio-demographic data and smoking history and dependency data to reveal their correlation to the success rate (quit-rate) of SC-interventions overall.

Methods: An exploratory database analysis of 18,392 participants from 2006-2008 in the national Danish Smoking Cessation Database at the WHO Collaborating Centre at Bispebjerg University Hospital in Denmark was carried out. Besides the quit-rate the analysis focused on data regarding socio-demo-graphics, smoking history, nicotine dependency, type of cessation intervention, etc. Social class was defined according to the definitions of Danish Statistics. Follow-up on continued abstinence after 6 months.

Results: The study confirms the presence of a correlation between the success rate of SC-interventions and socio-demographic factors such as education / social classes. The quit-rates for social class 1 to 5 are: 15%, 15, 16, 20 and 21% re. ITT analyses of 18,392 smokers and 41, 40, 38, 46, 51 re. PP analyses for 11,671 compliant smokers, respectively. The corresponding quit-rates re. occupation was 15%, 16, and 38, 42%, respectively.

Conclusion: Understanding of the correlation between the success rate of SC and socio-demographic factors is valuable for targeted and differentiated SC-interventions in the future to increase the number of quitters and to reduce the inequalities in the results for smokers in the lowest social classes, who has the highest smoking prevalence today.

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POSS-78

DIFFERENTIATING BETWEEN ADDICTIONS TO NICOTINE, ALCOHOL AND DRUGS: PROBLEMS AND POSSIBILITIES

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Objective: Attributions to reimbursement for smoking cessation therapy in several European countries imply that nicotine addiction is considered to be a relatively mild addiction compared with addiction to alcohol or drugs. It has been assumed that addiction to different substances vary in severity, with mild addictions being easier to overcome than severe addictions. Therefore, an attribution to nicotine should be less difficult to overcome than addiction to alcohol or drugs. We investigated whether there is any difference between addiction to nicotine, alcohol or drugs (cocaïne, opioids), and tested the hypothesis that nicotine addiction can be regarded as mild.

Methods: Cessation (quit) rates while receiving a placebo or no treatment, and relapse rates following successful cessation, provide a measure of how hard it is to stop an activity. Addictions to nicotine, alcohol and drugs were differentiated on this basis. Systematic reviews and meta-analyses of interventions examining cessation or relapse rates in randomised trials using abstinence at 6 months or longer were used as a source of information.

Results: The majority of the data used for analysis came from 12 systematic reviews and meta-analyses of smoking cessation studies involving more than 127,000 participants with cessation rates of 6 months or longer. Also included were reviews of treatments for alcohol and drug addiction, each review providing data from several thousand participants. Most of the reviews had considered mainly long-term studies and had determined abstinence using objective measures (i.e. urine cotinine for nicotine, biochemical tests for alcohol, and benzoylecgonine or opioid metabolites). Cessation rates were 8% for nicotine, 18% for alcohol, 62% for cocaine and 44% for opioids. Relapse rates were 72% for nicotine, 56% for alcohol, 62% for cocaine and 63% for opioids.

Conclusion: We suggest that nicotine is more difficult to give up than alcohol, cocaine or opioids. They do not support the hypothesis that addictions perceived to be mild are easier to overcome; either cessation rates do not adequately test the strength of an addiction or the hypothesis is not true.

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POSS-80

INCREASING NICOTINE-DEPENDENCE SEVERITY BETWEEN 1989-2006: IMPLICATIONS FOR RESEARCH AND FOR TREATMENT

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Purpose: The worse nicotine-dependence, as measured by either Fagerström Test (FTQ) or the newer FTND score, the less effective a fixed treatment regimen will be and the greater the medical need for more intensive tobacco-dependence treatment.

Methods: We compared nicotine-dependence severity, as measured prospectively by the Fagerström Tolerance Questionnaire (FTQ) scale (0-11 points), before any treatment began, in three different cohorts: (1) Nicotine Patch Study (NPS), N=220, Enrolled 12/89-4/90; (2) Bupropion SR Study (BSRS), N=206, Enrolled 9-12/94; (3) St. Helena Hospital Center for a Smoke-Free Life (CSFL), N=204, Enrolled 2/05-10/06.

Results: Pretreatment FTQ steadily increased as a function of time: 1989 (NPS), 6.65±1.72 (mean±1SD), v 1994 (BSRS), 7.02±1.80, v 2006 (CSFL), 7.44±1.80 (Spearman P<0.0001). Also, the proportion with a high FTQ score (7-11 points) steadily increased from 1989 to 2006: NPS 55.5% (122/220) v BSRS 65.5% (136/206) v CSFL 73.0% (151/204).

Conclusions: Patients trying to stop cigarette use now are significantly more nicotine dependent than 15 years ago. Nicotine-dependence severity, measured by the FTQ, has increased 12% between 1989-2006, while the proportion classified as highly nicotine dependent (FTQ greater than 6 points) has increased; now, 75% of patients currently seeking tobacco-dependence treatment are highly nicotine dependent. IMPLICATIONS: Clinical researchers should anticipate a greater proportion of high nicotine-dependent participants entering trials than 15 years ago. This should affect study design. Also, treating clinicians should consider this change to optimize treatment effectiveness and suppression of nicotine withdrawal symptoms, so the patient does not experience treatment failure.

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POS5-81 PREDICTING DELAYED VS. INTERMITTENT QUITTING: A POOLED ANALYSIS OF SMOKERS TREATED FOR 12 WEEKS WITH VARENICLINE VS. BUPROPION SR AND PLACEBO

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Background: Delayed and intermittent quitters share some similar quitting behaviors. Both report ≥1 week of smoking and ≥1 week of abstinence during treatment. Delayed quitters successfully achieved continuous abstinence for Weeks 9–12; intermittent quitters did not. Early differentiation of these groups by smoking characteristics and Patient Reported Outcome (PRO) scores may be helpful to guide therapy.

Objective: To analyze demographic, smoking history and PRO data for delayed and intermittent quitters from two pooled identically designed randomized smoking cessation trials of varenicline 1.0 mg twice daily (n=696), bupropion SR 150 mg twice daily (n=671), or placebo (n=685) for 12 weeks.

Methods: Participants were generally healthy smokers aged 18–75 years with no self-reported significant medical or psychiatric histories including depression. At clinic visits, abstinence was confirmed by carbon monoxide values ≤10 ppm and brief (<10 minutes) counseling was provided. The primary endpoint was continuous abstinence for Weeks 9–12. Due to the interrelationship between the PRO instruments used (MNWS, QSU-Brief; mCEQ), separate logistic regressions were conducted for each instrument. The outcome was the quitter groups. Covariates were patient characteristics, treatment, and Week 2 PRO domain score, adjusted for PRO domain baseline. Scores one week after the quit date (Week 2), were selected due to the importance of identifying early indicators of quitting patterns.

Results: Significant predictors for being more likely an intermittent rather than a delayed quitter included 7-day point prevalence abstinence at Week 2 (p=0.001), carbon monoxide change from baseline to Week 7 (p=0.04) and ‘Urge to Smoke’ in analyses with MNWS (p=0.01); 7-day point prevalence abstinence at Week 2 (p=0.003) in analyses with QSU-Brief; treatment group (p=0.02) and previous quit attempts (p=0.04) in analyses with mCEQ.

Conclusion: Early treatment (Week 2) success does not necessarily predict end-of-treatment success for those who smoke after the TQD (delayed quitters). Patients should be encouraged to complete their full course of treatment to reduce urges and optimize success.

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POS5-82 HAPLOTYPE SPANNING TTC12 AND ANKK1, FLANKED BY THE DRD2 AND NAC1 LOCi, IS ASSOCIATED WITH SMOKING PROGRESSION IN AFRICAN-AMERICANS AND EUROPEAN-AMERICANS

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A genomic region (11q23) containing a cluster of 4 genes (NCAM1, TTC12, ANKK1, DRD2) has been associated with vulnerability to dependence on addictive substances in linkage, genome-wide and candidate gene association studies. Recently, Gelernter and colleagues demonstrated that haplotypes containing four single nucleotide polymorphisms (SNPs), within a linkage disequilibrium block, TTC12 rs2303380 A/G and ANKK1 rs-4938012 G/A, rs4938015 C/T and rs11604671 C/T, were associated with nicotine dependence in African Americans (AAs) and European Americans (EAs). We examined whether rs2303380-rs4938012-rs4938015-rs11604671 haplotypes were associated with smoking progression in AAs and EAs by genotyping participants (N=531), using longitudinal interview data in 1993/94 and 2004/05 from the Baltimore Epidemiologic Catchment Area cohort study. Among AAs (n=166), using multiple logistic regression analyses, the GATG haplotype was associated with becoming a daily smoker (p=.088). There was a statistically significant gene x sex interaction such that men possessing the GATG haplotype were more likely to become daily smokers (p=0.029) and persist in smoking into the fifth decade of life. Among EAs (n=365), the AGCG (p=.006), AACA (p=.019), and AGCA (p=.017) haplotypes were associated with progression from daily smoking in adolescence to persistent smoking into the sixth decade of life. Moreover, there was a significant gene x sex interaction such that men possessing any of these haplotypes reported earlier onset of daily smoking (p=.019-.047). These data suggest that, in two distinct ethnic populations, TTC12/ANKK1 rs2303380-rs4938012-rs4938015-rs11604671 haplotypes are associated with nicotine dependence and also predictive of progression of smoking from the onset of daily smoking in adolescence to persistent smoking (or cessation) in adulthood. This genomic region should be considered when developing tailored preventive interventions.

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“Low tar” cigarettes were designed and marketed in an effort to falsely reassure consumers about the health risks of smoking. Many of the marketing channels traditionally used by tobacco companies to promote lower tar cigarettes have been restricted or prohibited, including the use of the terms “light” and “mild” on packages. The current work examined the extent to which smokers in four Western countries continue to perceive differences in the risks of cigarette brands and the types of information they use to identify potential differences in risk. We present data from Wave 5 (n=2019) and Wave 6 (n=2225) of the ITC 4-Country Survey conducted with adult smokers in Canada, the US, the UK, and Australia. The belief that some cigarette brands may be less harmful than others is widespread, ranging from a high of 24% in the US to a low of 16% in Canada and Australia. Over half (54%) of the UK sample agreed that “the harsher the smoke feels in your throat, the more dangerous the smoke is”, compared to 47% in the US, 44% in Canada, and 42% in Australia. In addition, 51% of the Canadian sample indicated that tar numbers on cigarette packs are related to the amount of tar that smokers take into their bodies, compared to 52% of the Australian sample, 44% of the US sample, and 39% of the US sample. When asked whether they believed the term “smooth” means that cigarettes are some form of light, mild, or low-tar cigarettes, 42%, 37%, and 36% of the UK, Australian, Canadian, and US samples, respectively, agreed. Half or more of the Australian (65%), US (55%), and Canadian samples (50%) agreed that the term “ultra” means that cigarettes are some form of light, mild, or low-tar cigarettes, compared to 44% of the UK sample. Overall, the findings demonstrate that, despite attempts to ban misleading information about the relative harmfulness of some cigarette brands, a sizable number of smokers in Western countries continue to believe that some cigarette brands may be less harmful than others. These beliefs are largely driven by the sensory properties of these brands, as well as tar numbers and descriptive words on cigarette packs that have yet to be prohibited in the European Union.

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POS5-84 THE BENEFITS OF USING A NATIONAL SMOKING CESSATION DATABASE

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Background: The benefit of a national Smoking Cessation Database (SCD) at individual level is obvious. The SCD meets the criteria and needs for external monitoring and evaluation of established smoking cessation programs in order to assess the effect at individual level and to improve the quality. At the national level, one of the most important aims is to support our experiences in developing a clinical quality database, how to secure a smooth data transmission and how to use these real life results in order to improve the smoking cessation interventions.

Methods: Any smoking cessation unit, which offers standardized smoking cessation programs and systematic follow-up after 6 months, can participate in the SCD. The participating units use online registration forms to collect and register simple baseline data, including information regarding smoking profile, intervention given and smoking status at follow-up.

Results: Participation: By January 2008 more than 365 stop smoking units throughout Denmark had entered the SCD. The units are located in hospital and as well outside hospitals (e.g. pharmacies, primary care sector). More than 13,500 intervention programs and 46,000 participants from Denmark have been registered in the SCD, which covers about 80-90% of all face-to-face interventions in the country. Norway participates with three units. Effectiveness: Results from the 92 municipalities using the SCD are presented at the homepage for benchmarking, Information and use of results: At any time the units can make a data extraction on their own results from the internet in a preformatted report. The decentralised publishes a report including the national results twice annually. The National Board of Health uses the SCD for external evaluation of the smoking cessation programs, which they support

Conclusion: A national Smoking Cessation Database for smoking cessation programs has been well established, and a significant number of units participate in the project. The database serves as documentation of the health promotion activities within the field of smoking cessation.

The Smoking Cessation Database was established by the Ministry of Health and the Danish National Board of Health.

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Introduction: Many jurisdictions have moved to increase the availability of nicotine replacement therapy (NRT) without prescription. There is growing literature assessing the effectiveness of NRT in non-clinical settings, but research is limited on the duration of use and use of multiple forms of NRT. In a population-based cohort of smokers, we document the duration of use of various forms of NRT and describe the types of changes observed using follow-up data.

Method: Data on 1,375 adult current smokers with 18 months of follow-up were compiled from the Ontario Tobacco Survey, a longitudinal telephone survey of smokers conducted between 2005-06 in Ontario, Canada. Length of use for each of the nicotine patch, gum and inhaler was reported during each follow-up interview. Design-based descriptive analyses were employed to assess the average duration of use for each form of NRT and to describe how this varies by age, sex, education, as well as baseline level of consumption and quit intention.

Results: During 18 months follow-up, fifteen percent of smokers in the cohort reported any use of the nicotine patch; 15% reported gum use and significantly fewer (3%, p<0.05) reported use of the inhaler. Among those using NRT, 14% used more than one form during the follow-up period. The duration of nicotine patch and gum use did not differ statistically (34 vs. 30 days, respectively). Among NRT users, only 5% used each for a full 12 months and less than 1% used the nicotine patch period; less than 2% used nicotine gum for this duration. More than 90% used NRT for less than the minimum recommended of 8 weeks. Duration only differed significantly among age groups, with younger smokers using NRT longer than their younger counterparts. There was no association between smoker characteristics and use of multiple forms of NRT.

Conclusion: Few smokers use NRT for the recommended duration of 8 to 12 weeks for smoking cessation, and at present, use of multiple forms of NRT is low. Additional research is needed to understand why some smokers do not use NRT for the recommended duration. This information may help enhance practices related to NRT use in the general population.

The Ontario Tobacco Survey was developed by the Ontario Tobacco Research Unit, which receives funding from the Ontario Ministry of Health Promotion.

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POSS-88 SMOKERS’ AWARENESS AND BELIEFS ABOUT SMEAKESSO TOBACCO PRODUCTS

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Non-combusted tobacco products (i.e., smokeless tobacco), particularly Swedish-style snus, carry lower relative risks of several chronic diseases compared with combusted tobacco products, such as cigarettes. However, there is relatively little research on consumer perceptions of smokeless tobacco (SLT) products, including beliefs about the relative harm of SLT. This study sought to gather trends in the use of SLT and their beliefs about SLT products. Data for this study came from the International Tobacco Control Policy Four-Country Survey (ITC-4), a longitudinal telephone survey of adult smokers in 4 countries: US, UK, China, and Australia. Six waves of data (2002-2007), totaling 20,219 individuals, were assessed. Respondents were asked to report their awareness, recent use (past 6 months), and beliefs about the harmfulness of SLT compared to cigarettes. The results indicate significant differences in awareness of SLT products: 80.2% of US and 74.0% of Canadian smokers reported being aware of SLT in 2007, compared to only 64.6% of UK and 49.5% of Australian smokers. Between 2002 and 2007, the prevalence of SLT use among current smokers increased from 2.3% to 7.6% in the US, 0.5% to 2.4% in Canada, 0.3% to 0.9% in Australia, and from 0.6% to 2.0% in the UK. In 2007, less than one fifth of all respondents agreed that SLT is less harmful than “regular” cigarettes. Smokers in the UK (17.2%) and Australia (17.7%) were most likely to believe that SLT is less harmful, followed by Canadian (14.3%) and US (11.4%) smokers. Overall, the findings indicate modest increases between 2002 and 2007 in the prevalence of SLT use among current smokers. Awareness of SLT was lower in the UK and Australia, where SLT products are prohibited. Modest decreases were observed in the US, UK, and Australia between 2002 and 2007 in the belief that SLT is less harmful, with a modest increase observed in Canada. Overall, misperceptions about the risk of SLT products changed little between 2002 and 2007. In contrast to existing scientific evidence, a strong majority of smokers from all four countries appear to be unaware that SLT products are less harmful than cigarettes.

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POSS-89 ESTIMATING THE NUMBER OF SMOKERS IN ONTARIO, CANADA: LOOKING FORWARD TO 2036

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Background: Projecting future trends in smoking is critical to tobacco-related program and policy planning. Few population-based studies have prospectively examined the stability and variability in smoking behaviour over time and projected future numbers of smokers in Ontario, Canada. This study uses prospective data from a cohort of smokers and Canadian census data to project the number of smokers over three decades to 2036.

Method: Using a panel study of smokers, the Ontario Tobacco Survey, we studied 2,264 individuals who had smoked within 6 months of recruitment (July 2005 to December 2007) and had complete follow-up data for two consecutive six-month periods. At each interview, respondents were classified as daily smokers, non-daily smokers or recent quitters (not having smoked for the past 30 days), twelve-month probabilities of specific transitions (e.g., remained smoker, relapsed smoker, sustained quit) were determined and used to project the number of smokers in Ontario, Canada to 2036 using life table methodology. Age, sex, and smoking status specific death rates were applied. Additional projections were performed, assuming a doubling of the youth initiation rate and a halving of the youth initiation rate.

Results: We estimate that by 2036 the number of smokers in Ontario, Canada will fall by 50% from the current level of two million to one million. Compared to no change in cessation rates, it would still take up to two decades for the projected number of smokers to decline to half if cessation rates were doubled immediately. Although a halving of the youth initiation rate alone does not have as marked an effect, the combination of halving both the youth and adult initiation rates is projected to result in a considerable decline in the number of smokers as well.

Conclusion: Despite declining prevalence, the number of current smokers is projected to remain substantial over the next three decades, and the tobacco epidemic will still be far from over. Measures aimed at preventing smoking initiation and the strong and stronger efforts aimed at promoting smoking cessation are needed.

The Ontario Tobacco Survey was developed by the Ontario Tobacco Research Unit, which receives funding from the Ontario Ministry of Health Promotion.

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POSS-90 EFFECT OF ISOMETRIC EXERCISE AND BODY SCANNING ON DESIRE TO SMOKE AND WITHDRAWAL SYMPTOMS

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Aims: To examine the acute effects of two guided relaxation routines (body scan and isometric exercise) on desire to smoke and tobacco withdrawal symptoms.

Methods: Following overnight abstinence, 48 smokers (mean (SD) age=27.8 (8.4), mean (SD) daily cigarettes=15.5 (4.2)) were randomly assigned to complete a 10-minute isometric exercise routine (IE, n = 14), a 10-minute body scan (BS, n = 18) or listen to a natural history passage for 10 minutes (control group, n = 16). The participants were seated for all the interventions. Each individual received their intervention on two occasions using an audio recording delivered via head- phones and an mp3 player. The intervention was received first in the laboratory and then in their natural environment. The interventions, and up to 30 minutes post-intervention. All ratings were made on a palm-top computer.

Results: Controlling for baseline scores, the means for the post-intervention desire to smoke and withdrawal symptoms scores were significantly lower for the IE and BS groups compared with the control, in both the laboratory and natural environment. There were no significant differences for IE versus BS.

Conclusions: Brief IE and BS interventions are equally effective for reducing strength of desire to smoke and tobacco withdrawal symptoms in temporarily abstaining smokers, and they are effective in the laboratory and in the smoker’s natural environment. These techniques may be beneficial for managing desire to smoke and tobacco withdrawal.

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SMOKERS AND PREPS: MEASUREMENT OF INHALED AND EXHALED TOBACCO SMOKE PARTICULATE

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Potential reduced exposure tobacco products (PREPs) are designed to lower human exposure to targeted tobacco smoke constituents. Clinical studies are needed to evaluate these novel exposure claims. Current research on the deposition of mainstream smoke particulate in smokers is insufficient to determine if cigarette con figurations influence exposure or disease risk. A 45-subject crossover study was conducted in which pa pd Double-smoked cigarettes, 2 PREPs and 2 traditional, in a laboratory setting while topography, and exhaled particulate and CO data were collected. Each brand/smoking session was separated by one week and brand sequence was random. PREPs were two de-nicotinized cigarettes, 0.6 and 0.05 mg nicotine (Q1 and Q3), and traditional were a full flavor (FF) and ultra light (UL) cigarette, 1.0 and 0.5 mg nicotine. Of the subjects tested to date, the majority smoked full flavor, while some smoked light or roll your own. On average, subjects took one more puff for FF than Q1 and Q3 (p<0.007), and between FF and Q1, 36% of all cigarettes were different (p<0.001). Q1 was 5% longer than Q3. Puff duration was different (p<0.001), except between FF and Q1; again the greatest difference was between Q1 and Q3, Q3 puffs were 20% longer. Average and peak flow were also different (p<0.007) with Q1<FF<UL<Q3; UL was 15-14% higher than Q1. Time spent smoking was different (p<0.001) except between the two PREPs; the largest differences were between FF and PREPs cigarettes, FF took subjects 32-34% longer. Mass of machine-generated subject-specific mainstream smoke (SSMS) and exhaled breath particulate were determined gravimetrically for fine and electronically for ultrafine particles. Average SSMS (30-43 mg), exhaled breath (6-9 mg), and deposited fines (24-35 mg) were different (p<0.005) between the traditional and Q3, and between the two PREPs; Q3 mass was 16-29% smaller. CO was different across all cigarettes and showed the opposite trend of puff volume, with Q3<UL<FF<Q1; Q1 was 45% larger than Q3. Ultrafine and fine particle-bound TSNA and PAH data will be presented.

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SMOKING CESSATION IN PERIPHERAL ARTERY DISEASE PATIENTS

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Peripheral artery disease (PAD) is a highly prevalent atherosclerotic disease that markedly decreases functional capacity and may progress to cause ischemic rest pain, gangrene, or amputation. Use of tobacco is the leading risk factor for PAD, but few prospective clinical trials have evaluated smoking cessation interventions in patients with PAD. In this randomized controlled trial, subjects were outpatients who were identified from medical records as cigarette smokers with lower extremity PAD and who indicated a willingness to quit in the next 36 days. Participants were randomly assigned to either an intensive tailored PAD-specific smoking cessation intervention or a minimal intervention. The intensive program included counseling, exercise instruction, coaching, and a relationship between smoking and PAD, and encouragement to use pharmacological aids. The number of counseling sessions was determined by patient preference. Subjects completed surveys at baseline and at 3- and 6-month follow-up. Reported 7-day point prevalent smoking abstinence was confirmed by cotinine testing or carbon monoxide assessment. Of 667 patients identified as probable smokers with lower-extremity PAD, 232 patients met study eligibility requirements and 124 (53% of eligible) enrolled. Subjects were predominantly male (85%) and Caucasian (94%); the median age was 60 years (range: 40-81 years). The median length of initial smoking was 16 years and participants smoked a median of 20 cigarettes per day. Of the 64 subjects randomized to intensive intervention, 69% used at least one pharmacological aid. Subjects were receptive to counselor contact: only two could not be contacted for counseling; the median number of sessions was 8 (range 0-18). Sessions randomized to the intensive intervention group were significantly more likely to be confirmed abstinence at 6-month follow-up: 20.3% vs. 6.7% in the minimal intervention group (chi-square= 4.874, p=0.03). These results suggest that many long-term smokers with PAD are willing to initiate a serious quit attempt and to engage in an intensive smoking cessation program. The study demonstrated a significant effect of intensive PAD-specific intervention on smoking abstinence.

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STABILITY OF SALIVA COTININE IN SMOKERS OVER A THREE-MONTH PERIOD

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Examination of cotinine values among smokers has suggested that smokers compensate for reduced nicotine availability and maintain a certain level of nicotine intake. However, there are few evaluations of the within-individual stability of cotinine over time. Using data from the Smoking Toolkit Study, a national household survey in England, the aims of this study were: 1) to examine the viability of using postal data collection of saliva samples for cotinine analysis and 2) to use these data to establish the stability of nicotine intake over a 3-month period. All smokers identified at the baseline survey of the Smoking Toolkit Study were invited to take part in a postal follow-up 3 months and 6 months later. 50% of these smokers (n=2960) were asked to provide a saliva specimen for cotinine analysis. Preliminary analyses of these recently acquired data show that a total of 869 saliva specimens were returned at 3 months (29%) and 602 returned at 6 months (20%), 249 (17%) of these contained insufficient salivary volume for analysis. A further 19% (1%) were not used or contaminated. A total of 375 (13%) participants provided a valid saliva sample at both 3 months and 6 months, of whom 310 (10%) reported that they were smokers at both time-points. The correlation between cotinine values at 3 months and 6 months among smokers was r=0.7 (p<0.001) and the median percentage variation across time-points was 29%. A partial correlation controlling for cigarette consumption at 3 months and 6 months reduced the correlation to r=0.63 (p<0.001). A total of 91 smokers reported that they were not cutting down their cigarette use. When restricting the sample to include only these stable smokers, the correlation was r=0.73 (p<0.001), with a median percentage variation of 31%. Controlling for cigarette consumption at both time-points the partial correlation was r=0.68 (p<0.001). These data provide evidence of the moderate within-subject variability of nicotine intake across a 3-month period, subject to the limitations imposed by postal collection of such data.

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CIRCUMSTANCES SURROUNDING FIRST LAPSE IN RELAPSED SMOKERS

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Objective: The aim of the current study was to examine the situation preceding 'late' smoking relapse, particularly the availability of tobacco and the intentions and feelings prior to first lapse.

Method: A cross-sectional postal survey was sent to 1390 adults who were identified as having been initially abstinence 4 weeks after treatment support with a NHS stop smoking service. Participants were followed up in November 2007 with follow-up time since treatment varying between 6 weeks and 3 years 4 months. Outcome data comprised the information reported by relapsed smokers on how long they had remained abstinent and their behaviour, feelings and intentions immediately prior to first lapse.

Results: 40% (n=556) responded to the survey, of which 35.8% (n=199) had relapsed. Almost half of relapers (48.7%) had only intended to smoke one or 2 cigarettes before stopping again (i.e. temporary smoking intention) and half (45.7%) had bought the cigarette of first lapse. Whether the first lapse cigarette was bought was likely to have been bought or offered by someone else was related to the duration of abstinence (chi square=7.983, df=1, p<0.01). In particular, buying cigarettes was 4 times more likely than being offered a cigarette among those relapsing within 3 months. An intention of only temporary smoking, rather than a complete relapse, increased with abstinence duration (chi square=7.899, df=1, p<0.01). Fifty-four percent of responders reported being miserable at the time of first lapse, and this did not vary according to duration of abstinence.

Conclusion: The findings suggest that a substantial proportion of relapse attempts may fail with late relapse due to a perception that abstinence can be briefly suspended and then resumed again without high risk of relapse. This increases with the duration of abstinence. At the time immediately before lapsing poor mood appears to predominate, although it is unclear if mood is a contributing factor in the relapse, or is determined by an expectation of failure.

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**POS5-95** UNDER THE RADAR: UNDERSTANDING TOBACCO USE IN URBAN AFRICAN-AMERICAN YOUNG ADULTS


Very high rates of smoking and low rates of cessation in 18-24 year olds have been identified as growing health concerns. Of particular concern are those young adults, who are not in college, unemployed/underemployed, or economically disadvantage and who are a target market of the tobacco industry. Factors associated with high smoking rates include easy access to cheap tobacco products, especially the practice of selling "loosies" (single sticks) in stores and on the street. The growing use of little cigars, e.g., Black & Milds, has also been identified as problematic. Little cigars are seen as different from cigarettes to some young adults, they may be viewed as less harmful and/or felt to represent status. Little cigars are often inhaled like a cigarette, rather than smoked with minimal inhalation like a cigar. Little cigars are legally sold singly and are taxed at lower rates than cigarettes. These practices lead to misconceptions about little cigars and may contribute to the high smoking rates documented in Baltimore. Acknowledging this fact, Baltimore recently instituted a regulation to prohibit the sale of single little cigars. Smoking of little cigars may also lead to a misrepresentation of smoking rates, as participants may not identify themselves as a smoker if they exclusively smoke little cigars. As part of an exploratory study, a survey was conducted with 206 intercity African American young adults (mean age 19.4), to examine whether they reported smoking any tobacco product (males: 75%; females: 46%) with 23% reporting smoking little cigars (males: 31%; females: 17%). Further questioning revealed that 9% smoked only little cigars (males: 12%; females: 6%) and these individuals did not consider themselves as smokers of cigarettes. Although women are less likely than men to smoke little cigars, they reported smoking more little cigars in the past 30 days than were reported by men (24 vs. 8 little cigars per month). Since the adverse health effects of all forms of tobacco usage are well documented, understanding why these young adults are smoking little cigars and understanding how they respond to surveys about tobacco usage is an important area of study.

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**POS5-96** THE ROLE OF SOCIAL SUPPORT IN CESSATION OUTCOMES OF SUSTAINED RELEASE BUPROPION TREATMENT FOR ADOLESCENTS: A MULTILEVEL ANALYSIS

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Recent data indicate that smoking rates among 8th, 10th and 12th grade students have again begun to decline after a period of relative stagnancy. However, cigarette uptake remains high among this age group. Approximately 4,000 young adolescents, who are not in college, unemployed/underemployed, or economically disadvantaged, and who are a target market of the tobacco industry, become daily smokers. Further, evidence suggests that most young people who smoke want to quit, yet few are successful in doing so. Despite over a decade of research in this area, few cessation approaches have demonstrated efficacy and little is known about for whom treatment is working. This analysis of data from a large scale trial of sustained release bupropion for adolescent smoking cessation is designed to assess whether social support, as defined by the number of support persons participants reported each week, moderates the relationship between treatment effects and cessation outcomes (7-day point prevalence abstinence and 30 day continuous abstinence) over time. Participants were 312 adolescent girls and boys between the ages of 14 and 17, randomized to receive one of three medication doses: placebo, 150 mg bupropion or 300mg bupropion over six weeks of medication treatment with follow up at 12 and 26 weeks. Multilevel modelling was employed to examine whether, over time, those participants reporting higher social support demonstrate greater reductions in smoking at the end of treatment than those with lower reported social support. Results of three multilevel analyses will be presented. First, data through week 6 (end of treatment) are used to test for moderation during the treatment phase. Second, all follow up data are included to test for moderation through the post-treatment time-period, which could be considered the maintenance/relapse period of the quitting process. This paper will present exploratory analysis testing for the interaction of social support with age and gender as additional potential moderators will be presented.

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**POS5-97** SMOKING-RELATED DISEASE EVENTS AVOIDED QUITTING SMOKING—A SIMULATED COUNTRY PERSPECTIVE

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Tobacco smoke is the leading preventable cause of death and illness in the world. More than eight per cent of all deaths will die from a smoking-related (SR) disease such as chronic obstructive pulmonary disease, cardiovascular or cerebrovascular disease, lung cancer or asthma. Smoking cessation (SC) is one among other tobacco control interventions that enable reduction in smoking prevalence and reduction in the amount of future disease events. Due to differences in effectiveness (quit rate) SC-interventions result in different number of events avoided.

Objectives: To simulate and compare the SR disease events and deaths avoided, as well as the costs saved due to abstinence of motivated smokers using different SC-interventions (behavioural modification smoking cessation courses (BMSC), nicotine replacement therapy (NRT), bupropion, varenicline and unaided cessation) in Denmark.

Methods: With a national perspective a Markov model covering one-third of all Danish smokers, who are motivated to quit, and focusing on disease events and deaths avoided and costs saved, was developed with a lifetime horizon. Evidence of the SC-intervention’s quit rates (ITT) came from clinical trials and Cochrane reviews. Danish statistics on incidence, prevalence and mortality of the SR diseases were applied, as well as national survey data on smokers motivated to quit. Treatment costs of future disease events were in 2006-prices.

Tobacco use was modelled as a binary variable. Evidence of the SR disease incidence as a lifetime perspective was simulated for unaided cessation (161,791 events) followed by NRT (158,092), bupropion (157,489), BMSC (157,240) and varenicline (154,592).

Tobacco use was modelled as a binary variable. Evidence of the SR disease incidence as a lifetime perspective was simulated for unaided cessation (161,791 events) followed by NRT (158,092), bupropion (157,489), BMSC (157,240) and varenicline (154,592).

Results: One single quit attempt with varenicline resulted in between 2,626 - 7,199 SR disease events avoided and between 934 – 2,520 SR deaths avoided compared with the four other SC-interventions. With more disease events avoided varenicline was also more cost-saving than the other interventions in Denmark.

Conclusions: This simulation analysis shows that the future number of SR disease events avoided will depend on which SC-intervention is applied. The costs saved from disease events avoided was highest in the case of varenicline.

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**POS5-98** QUITTING SELF-EFFICACY MODERATES THE IMPACT OF BEHAVIORAL TREATMENT IN TOBACCO-DEPENDENT CANCER PATIENTS

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Quitting self-efficacy is a consistent predictor of smoking abstinence. We examined quitting self-efficacy in cancer patients participating in a randomized trial that compared usual care (UC, n=89; NRT + counseling) to UC enhanced by a behavioral regimen, scheduled reduced smoking (UC+ SRS, n=86), guided by a hand-held computer. All patients were expected to quit smoking at least 24 hours before hospital admission. Biochemically verified point abstinence and quitting self-efficacy (Confidence Questionnaire Form) were assessed at hospitalization, 3 and 6 months later. Because UC and UC+SRS treatment outcomes were equivalent at 6 months (32% vs. 32%, n.s.), we explored whether or not self-efficacy moderated the impact of UC+SRS on abstinence. Using GLIMMIX, we examined the effect of time, treatment, and self-efficacy on smoking abstinence. Lagged self-efficacy (self-efficacy assessment made at the time point preceding the abstinence outcome assessment) was used in analyses. Self-efficacy significantly interacted with time; higher self-efficacy at 3 months was associated with a higher abstinence rate at 6 months (p < 0.0001). The self-efficacy X treatment interaction indicated that higher self-efficacy was associated with a higher abstinence rate in the UC+SRS group than in the UC group (p = 0.017). Within the UC+SRS group, a 10-point increase in self-efficacy entailed a 1.09 odds ratio in abstinence (95% CI: 1.22 – 1.85), but a 10-point increase in self-efficacy entailed a 1.09 odds ratio in the UC group (95% CI: 0.92 – 1.30). Providing patients with a smoking reduction aid appeared to facilitate the increased benefit of quitting self-efficacy outcomes. We are examining ecological momentary data that may illuminate further the role of self-efficacy in abstinence outcomes.

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POS5-99  
ONLINE COUPLING OF MOLECULARLY IMPRINTED POLYMERIC MICRO-COLUMN WITH TANDEM MS FOR ANALYSIS OF A URINARY TOBACCO SPECIFIC NITROSAMINE BY DIRECT INJECTION

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4-(methylN-nitrosamino)-1-(3-pyridyl)1-butanone (NNK) is a tobacco-specific lung carcinogen, which plays an important role as a cause of lung cancer in smokers. NNK is extensively metabolized to 4-(methylN-nitrosamino)-1-(3-pyridyl)-1-butanone (NNAL), which like NNK is a potent pulmonary carcinogen. Measurement of urinary NNAL and its glucuronide detoxification conjugate may provide useful biomarkers of tobacco smoke lung carcinogen metabolism. In the current work we have developed a molecularly imprinting micro-column (MIP) micro-column system for direct injection of urine in the analysis of NNAL coupled on-line with LC/MS/MS. Prototype columns were constructed based on a method developed in our laboratory. Micro-columns were constructed from PEEK tubing with dimensions 500 µm i.d. – 1/16 in. o.d. These were packed with MIP beads specific to NNAL under negative pressure using a vacuum pump. Urine samples spiked with NNAL were injected directly onto the MIP micro-column coupled on-line with a triple quadrupole MS in the positive ESI mode. The mobile phase was comprised of 25% water (wash solvent) and 75% methanol (elution solvent) at 1 mL/min. A switching valve was used to divert matrix components to waste during the washing step. Run time was 6 minutes, with the valve switched from the wash to the elution solvent at 3.2 minutes. A post column infusion study with urine as the matrix and NNAL as the target indicated the presence of ionization suppression. In order to reduce the ionization suppression matrix effects, a reverse phase C18 column was introduced in line with the MIP micro-column. The decrease in matrix effects after introduction of the trap column was reassessed and found to be successful. The method has potential for low volume, fast sample analysis. It will be further assessed for sample loadability and optimized in order to provide detection for the low urinary NNAL concentrations.  
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POS5-100  
THE ASSOCIATION OF INDOOR AND OUTDOOR WORKPLACE SMOKING POLICIES WITH QUITTING

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Background: Research has demonstrated the effectiveness of indoor smoke-free policies in increasing quitting. Most of this work has focused on smoking restrictions in indoor workplaces. Increasingly, workplaces are extending their policies to include bans on smoking on work grounds. To date, there has been little examination of the prevalence of combined indoor and outdoor workplace smoking policies and quitting. We examined this relationship through an analysis of Minnesota Adult Tobacco Survey (MATS) data.

Methods: MATS, most recently conducted in 2007, is a state-wide, cross sectional survey that measures tobacco use among Minnesota adults. Using a sub-sample of smokers employed in indoor work settings (n=1,123), bivariate and logistic regression analyses were used to examine the association between working in a setting with both indoor and outdoor smoke-free policies (smoking not allowed anywhere on work property outside of the building) and reported quit attempts in the 12 months and successful quitting in the past year. Results: The prevalence of a total workplace ban among smokers employed indoors was 17 percent (n=166). The presence of a total ban was associated with gender (p=0.0017) and education (p=0.0071) with females and those with higher education levels more likely to report a total ban. Age and income were not associated with having a total ban on smoking in the workplace. Respondents with a total ban were more likely to report a quit attempt in the past 12 months (69%) than those with no ban (53%) (p=0.0297). Among past year smokers with a total ban, women (65%) were more likely than men (46%) to report a quit attempt (p=0.0003). Results from a logistic regression model suggest that working under total ban conditions increases the odds that smokers will attempt to quit (OR=1.78 [0.92, 3.44]); p value=0.089 after controlling for age and gender. Working at a job with a total ban was not associated with a rate of success among people making attempts to quit.

Conclusion: Workplace bans on smoking that include smoke-free grounds may lead to increased attempts to quit. Further study, including longitudinal analysis, is warranted.

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POS5-101  
The Efficacy of Nicotine Lozenges for Smokeless Tobacco Cessation

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The objective of this randomized double blind multi-center clinical trial was to evaluate the efficacy of 4 mg nicotine lozenges for increasing prolonged and point prevalence tobacco abstinence in the treatment of adult smokeless tobacco (ST) users. The two-group phase III trial enrolled 270 participants (264 male and 6 female). The mean age of participants was 37 and 97% used moist snuff. Subjects had used ST for an average of 16 years and 56% had some college. Participants receiving active medication had a significantly higher quit rate than subjects receiving placebo medications at both 3 and 6 month follow up. The 4 mg lozenge increased self-reported ST abstinence (OR 2.0, 95% CI: 1.2-3.2; p=0.013) compared to placebo at the end of treatment. Biochemically confirmed 7-day point prevalence tobacco abstinence 12 weeks (end of treatment) was 53% and 47% at 6 months. The use of 4 mg nicotine lozenge appears to be a promising adjunct to behavioral treatment for both reducing withdrawal symptoms, and craving as well as an efficacious adjunct to treatment. Implications of the study will be discussed.

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POS5-102  
Tobacco Cessation Education in United States Dental School Curriculum

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Introduction: A survey was conducted to examine tobacco cessation curriculum within all United States dental schools (n=56). Course content, methods used to deliver course material, and evaluation of tobacco cessation education efficacy were assessed. Respondents also provided information on their perceived barriers to implementing tobacco cessation into the curriculum.

Methods: The surveys were administered to faculty identified as responsible for teaching tobacco cessation material. Respondents were identified via school websites and phone calls to the academic dean and were contacted by means of electronic mail. Survey responses were collected via two methods: Survey Monkey (an online survey collection tool) or by telephone.

Results: Responses were received from 55 (98%) schools. Forty-eight (87%) respondents reported that tobacco related education was an integrated part of their school’s curriculum for pre-doctoral students, however only 21 (38%) schools have a specific tobacco cessation/treatment of tobacco dependence course. Tobacco education was most likely to be incorporated into courses such as: oral pathology/oral medicine (39%) and periodontics (36%). Pathologists were the most common provider of tobacco cessation material (32%), followed by periodontists (19%), general dentists (18%), psychologists (11%) and dental hygienists (11%). Fifty-two (95%) of schools used full class lectures to teach tobacco cessation, while 14 (26%) reported using information technology such as DVDs. Only 7 (13%) provided clinical clerkships in tobacco cessation. Thirty-one percent (17) of respondents reported lack of support as a barrier to implementing tobacco cessation within the curriculum. Of the 17 schools that identified lack of support as a barrier, 86% reported that dental hygienists were involved in tobacco cessation education, compared to 46% of the 37 schools that did not consider lack of support as a barrier (p=.009).

Conclusion: We found varied approaches to teaching tobacco cessation across dental schools. Improvements in dissemination and teaching of material and additional exposure via the clinical experience are needed in U.S. dental schools.

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POS5-104
AN ANALYSIS OF DIFFERENCES BETWEEN COLLEGE STUDENT WATERPIPE AND CIGARETTE SMOKERS

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Studies on personality and the social variables of cigarette smoking are present in the literature, but no studies address these variables in hookah. In addition, no studies exist that compare hookah and cigarette smokers and their expectations regarding smoking, or in the personalities of those who choose to smoke. The current study was designed to address these gaps and extend our understanding of psychological differences between groups of occasional tobacco users.

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POS5-105
COMPARING THE EXPERIENCE OF REGRET AND ITS PREDICTORS AMONG SMOKERS IN FOUR ASIAN COUNTRIES: FINDINGS FROM THE ITC SURVEYS IN THAILAND, SOUTH KOREA, MALAYSIA, AND CHINA

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A striking phenomenon in smoking is that the vast majority of smokers do not want to smoke and have negative beliefs about smoking. This inconsistency can lead to differential responses to regulations (Lee et al., 2004). In a study of four high income countries of the International Tobacco Control (ITC) Project (US, Canada, UK, Australia), Fong et al. (2004) found that 79% of smokers expressed regret over their smoking, (2) countries did not differ in prevalence of regret, and (3) the factors that predicted regret were identical across the countries. In the present study we examined the overall prevalence of regret and its predictors among smokers in four Asian countries where ITC Surveys have been conducted (India, South, Thailand, Malaysia, and China). Regret was defined as a response of “agree” or “strongly agree” to the statement “If you had to do it over again, you would not have started smoking?” With the exception of Thailand, where regret prevalence = 92%, levels of regret were lower than in the Western countries (South Korea = 87%, Malaysia = 86%, China = 75%). These significant country differences in regret corresponded with differences in the strength of tobacco control, with higher regret found in countries with a stronger record of tobacco control and more negative societal norms regarding smoking. Logistic regression analyses revealed that, consistent with the Western countries, regret was more likely to be experienced by smokers who were older, urban dwellers, perceived greater benefits of quitting, had more prior quit attempts, spent more on cigarettes, reported having provided financial support for a smoker, and were worried that smoking would damage their future health, and felt that both their loved ones and society disapproved of smoking. These predictors were quite consistent across countries. Regret was also positively associated with intentions to quit (n=20, p<0.01). Although regret may vary across countries, it is still driven by the same factors in Asian and Western countries. These findings demonstrate that regret is an important indicator of societal norms regarding smoking and is related to factors associated with quitting across countries.

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POS5-106
SMOKING, CRASHING, AND BURNING: ACCIDENTAL DEATH RISKS BY SMOKING STATUS IN THE UNITED STATES

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Background: Smoking, accidents, and, probably, crashes, fires and other accidents to smoking are growing global problems. Accidents represented about 10% of the European and global 2004 burdens of disease in adults and are often forensically linked to mishandling of cigarettes. To reduce crash and fire accidents from cigarettes bans on smoking while driving, indoor, or in dry forests or grasslands are increasingly considered. Data on recent general population motor vehicle and overall accidental death risks by smoking status might aid deliberations on such bans but are largely unknown except that smokers averaged near 1.5 fold accident death risk ratios over 15 years ago. So we estimated recent United States (US) accidental death hazard ratios and rates by smoking status, minimizing selection, follow-up time, and other biases that afflicted previous estimates.

Methods: Data from the 2002 mortality follow-up of adult respondents to the 1997-2000 US National Health Interview Surveys (NHIS) were analyzed using Cox survival-time methods that adjusted for the complex NHIS survey design. The NHIS enrolls quite representative samples of the US adult noninstitutional populations.

Results: 105 motor vehicle and 131 other 1997-2000 NHIS interviewee accident deaths with complete data through 2002 were identified though only 5 and 10, respectively were female ex-smokers. Age-sex-adjusted overall and motor vehicle accident death hazard ratios 1.62 (95% confidence interval (CI) 1.23-2.13) and 1.41 (CI 0.90-2.22), respectively for current and 0.77 (CI 0.52-1.15) and 0.83 (CI 0.45-1.52) for former smokers.

Discussion: Large accidental death excesses are seen in United States smokers, even without adjusting for deaths of nonsmokers in smoking-caused crashes, fires, and other accidents. Reducing or restricting smoking might considerably reduce accidental death rates and costs.

Pfizer, Inc and University of California, Davis.

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Research Design: An interactive, tailored educational videogame was developed for smoking prevention and cessation among youth. A preliminary study was conducted using a pretest-posttest cohort design with assessments at baseline, 7 days and 6 months post-intervention. Feasibility and impact of the videogame on some tobacco-related measures at 6-month follow-up are reported.

Baseline Demographic Profile: A total of 239 high-risk-alternative-school students were recruited. Mean age of the participants was 16.2 years (SD=1.0), 79% were male. Thirty-six percent of the participants were Hispanic and 49% were African American. Twenty-five percent were smokers. Six-Month Feasibility Analysis: To date the 6-month survey has been completed by 144 participants. All participants played the videogame at least once and 40% played twice or more times. Over 85% of participants reported ease of use of this educational tool and the majority of the participants enjoyed the experience. After playing the videogame, 94% reported increased knowledge about the tobacco effects, 82% were inspired never to start or to quit and 82% planned to share the videogame with family or friends. Mediating Variables of Smoking at 6-month Follow-up: The primary concerns of interest in this study were the mediating determinants of smoking initiation and cessation including the pros and cons of tobacco use, decisional balance and temptations to smoke. These outcomes were analyzed using mixed model regression with time and baseline smoking status and their interaction as fixed effects. There was a significant interaction effect for cons of smoking (F=5.3; p<0.05), decisional balance (F=8.0; p<0.01), and temptations to smoke (F=7.6; p<0.01). For baseline smokers 6-month temptations to smoke were significantly lower than baseline, and 6-month cons of smoking were significantly higher than baseline. For nonsmokers these variables did not change significantly. The educational videogame showed considerable promise in terms of increasing tobacco knowledge and changing attitudes among high-risk yet undeveloped smokers.

This study was conducted while Alexander V. Prokhorov was at the University of Texas M.D. Anderson Cancer Center. Supported by DOD grant #WX18XWH-05-2-0027.04.

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### POS5-107 USING AN EDUCATIONAL VIDEOGAME TO TACKLE TOBACCO USE AMONG YOUTH

Alexander V. Prokhorov, M.D., Ph.D.*, Ellen R. Gritz, Ph.D., and Salma Marani, M.S.

### POS5-108 IS MORTALITY FROM SMOKING UNDERESTIMATED? RECENT REPRESENTATIVE UNITED STATES ALL-CAUSE MORTALITY RISKS BY SMOKING STATUS

Bruce Leistikow, M.D., M.S., University of California, Davis,

Estimates linking smoking to 443,000 United States deaths in 2004 and possibly 1 billion deaths globally in this century are based on 1982-1988 smoker mortality rates in a very low mortality cohort. So I contrasted mortality risks between that cohort and a representative cohort of smokers: US National Health Interview Surveys (NHIS) elicit quite representative samples of the US adult noninstitutional population. Data from two year follow-ups of adult respondents to the 1997-2000 NHIS were analyzed using Cox survival-time methods that adjusted for the complex NHIS survey design. Results: 852 never-, 491 current-, and 787 ex-smokers eligible NHIS interviewees were included. Ages 35+ age-adjusted male and female all-cause death hazard ratios (HRs) were 1.9 (CI 1.9-2.0) in the Cancer Prevention Study-II (CPS2) cohort on which many smoking attributable mortality (SAM) estimates are based. For the purpose of SAM calculation, smoking-attributable mortality (SAM) was substantially underestimated. Despite declining cigarette consumption in US smokers, smoking-related premature death risk excesses in recent, representative United States current smokers exceed those in CPS2 smokers by about 12% in males and 22% in females. Further SAM underestimation due to forgetful, secondhand, and insensible smoking in “never” smokers and cessation in “smokers” will be reviewed. Considerably strengthened emphases on tobacco control may be merited.

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### POS5-109 SELF REPORTED SMOKING VALIDITY BY MEDICAL STUDENTS IN TUNISIA

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Some studies were conducted to estimate the prevalence of smoking cessation among medical student but in our knowledge these studies were based only in self-reporting smoking. The aim of our study is to validate self-reported smoking among medical students.

Methods: A cross-sectional survey was conducted between October and December 2008 among first year medical students in Tunis medical school who completed a questionnaire based on that of the WHO and International Union against Tuberculosis and Lung Disease for health protection and public health. The validity of self-reports of smoking was calculated with measures of expired carbon monoxide. Results: The questionnaire was completed by 309 students as 63.3% of all first year students. About the two third of them (67.7%) were women. 25.4% and 3.5% respectively of male and female respondents reported current smoking. An additional, 6.3% of male and 6.2% of female respondents reporting no smoking had exhaled carbon monoxide levels higher then 6 ppm indicating current smoking.

Conclusions: Validation, self-reported smoking status among first medical students was poorly consistent with exhaled monoxide carbon test results.

Research Unity of Tobacco Epidemiology and Control.

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### POS5-110 NEGATIVE REINFORCEMENT AND CRAVING MOTIVES MEDIATE THE RELATION BETWEEN ANXIETY SENSITIVITY PSYCHOLOGICAL CONCERNS AND HEAVIER SMOKING

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There is evidence from the “smoking motives” literature that some people smoke to calm anxiety or to relieve nicotine withdrawal sensations (i.e., for “relief”). Moreover, some of our own previous work suggests that anxiety sensitivity (AS; fear of arousal sensations) is related to smoking maintenance including an increased risk of smoking lapse when attempting cessation. But little is known about why high AS smokers find it so hard to quit. In this study, we examined whether “relief” smoking motives mediate (i.e., intervene and help explain) the relation between AS and greater smoking behaviour. Participants were 123 daily smokers (84 women; mean age = 45.9 years) assessed at baseline when presenting to a structured smoking cessation program. AS levels were assessed with the Anxiety Sensitivity Index (ASI), which includes three scales: AS psychological concerns, AS physical concerns, and AS social concerns. Smoking behaviour was assessed retrospectively as past week average number of cigarettes per day. Smoking motives were assessed with the Wisconsin Inventory of Tobacco Dependence Motives; the scales of interest were the negative reinforcement (relief from negative affect) and the craving (relief from withdrawal) motives scales. We examined the mediation hypotheses using mediator regression analyses. Consistent with prior work: AS psychological concerns were significantly associated with heavier smoking behaviour; AS psychological concerns were significantly associated with greater negative reinforcement and craving motives; and both negative reinforcement and craving motives were associated with heavier smoking. When AS psychological concerns and negative reinforcement motives were entered simultaneously to predict smoking behaviour, only negative reinforcement motives but not AS psychological concerns continued to predict heavier smoking. These findings support the mediating role of negative reinforcement motives. Similar results were found when investigating craving motives as the mediator. The results support the role of negative affect management and nicotine withdrawal management processes in explaining the link of AS to smoking maintenance.

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Society for Research on Nicotine and Tobacco

Poster Session 5

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POS5-111 ACCURACY OF A 3-ITEM SCALE IN CLASSIFYING DSM-IV LIFETIME MAJOR DEPRESSIVE DISORDER IN SMOKERS AND NON-SMOKERS
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Lifetimelife of major depressive disorder (MDD) is frequently measured in smoking cessation trials to evaluate whether past MDD is associated with reduced treatment efficacy or effectiveness. Given the frequency and time required to administer structured clinical interviews, history of MDD is increasingly being measured using brief scales, typically 1-2 items, adapted from the Structured Clinical Interview for the DSM. The purpose of this study was to evaluate the accuracy of a 3-item scale in classifying DSM-IV lifetime MDD among smokers (n=474), former smokers (n=399), and never smokers (n=632) who participated in the New England Family Study. Participants averaged 39±2 years old, were mostly female (59%) and White (84%), and 59% had completed some college education. All participants completed a 3-item scale that asked about lifetime depressed mood (item 1) and anhedonia (item 2) lasting several days or longer. Among those who endorsed one or both symptoms, a third question asked whether either symptom was experienced nearly every day for at least two weeks or longer (item 3). Endorsers of at least one symptom (depressed mood or anhedonia), independent of duration, were administered the depression module of the Composite International Diagnostic Interview, a structured interview designed to diagnosis DSM-IV lifetime MDD. According to their response to three items, participants were classified as having as past 30 minutes of wakening, 20%; or, depressed mood or anhedonia ≥2 weeks (n=374; 25%). Endorsing depressed mood or anhedonia ≥2 weeks was highly sensitive in detecting past MDD: 85% were classified as history positive, as compared to only 27% of endorser of symptom(s) <2 weeks. Sensitivity did not vary by smoking status (smokers 86% vs. 32%; former smokers 89% vs. 42%; never smokers 81% vs. 27%). Brief scales appear to have high sensitivity to DSM-IV lifetime MDD as long as they incorporate a criterion of ≥2 weeks duration. Smoking treatment studies that fail to assess duration of past depressed mood or anhedonia likely substantially overestimate the rate of lifetime MDD.

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POS5-112 INDICATORS OF HARDENING AMONG U.S. SMOKERS AS A FUNCTION OF STATE-SPECIFIC SMOKING PREVALENCE
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Nicotine dependence appears to be higher in countries with lower smoking prevalence, consistent with the hardening hypothesis. We used data from three previously representative surveys of U.S. adult smokers to assess possible hardening: the 2006/07 Tobacco Use Supplement to the Current Population Survey (CPS) and national surveys of U.S. adult smokers to assess possible hardening: the 2006/07 Tobacco Use Supplement to the Current Population Survey (CPS) and national surveys of U.S. adult smokers to assess possible hardening: the 2006/07 Tobacco Use Supplement to the Current Population Survey (CPS). The CPS permitted comparison of all 50 U.S. states and the District of Columbia. The NCS and NCSAR data were divided into tertiles, based on low, medium and high cigarette smoking prevalence in the respondent’s state of residence. The TUS-CPS permitted comparisons of all 50 U.S. states and the District of Columbia. The NCS and NCSAR data were divided into tertiles, based on low, medium and high cigarette smoking prevalence in the respondent’s state of residence. The TUS-CPS data, the percentage of smokers who smoked 1) within 30 minutes of wakening, 2) at least 20 cigarettes/day, and 3) every day were all lower in states with the lowest rates of smoking (p<0.001 for each analysis). The percentage of smokers who had 1) made a recent quit attempt, 2) planned to quit soon, 3) high motivation to quit and 4) high self-efficacy were all higher in states with the lowest smoking rates (p<0.001 for each analysis). Abstinence for 3+ months was slightly higher in low prevalence states (p=0.012). The NCS-R and NCSAR surveys permitted multivariate analyses of co-morbidities in smokers. Of 16 conditions tested in the NCS-R, only Drug Abuse/Dependence (adjusted OR = 1.4 [95% confidence interval = 1.1-1.9] was more common in smokers living in low prevalence states than in high prevalence states). Manic disorder and nicotine dependence were less common in smokers living in low prevalence states. Of 15 conditions tested in the NCS-R, Any Past Year Diagnosis, Posttraumatic Stress Disorder, and Social Phobia were all less common in smokers in low prevalence states. With one important exception (Drug Abuse/Dependence), the results either do not support or run contrary to the hardening hypothesis.

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POS5-113 USE OF VARENICLINE IN A POPULATION-BASED COHORT OF SMOKERS
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Background: Randomized trials support the efficacy of varenicline for smoking cessation. Some trials suggest varenicline may be superior to other pharmacological therapies. Little is known about the effectiveness of varenicline when used outside of clinical trials. We examined the use of varenicline and cessation outcomes in a cohort of smokers.

Methods: The Minnesota Tobacco Cohort Study is an ongoing longitudinal study of adult smokers. Current and former smokers identified by statewide phone survey in 2007 were followed-up 1 year later (9u response rate=75.4%). Findings here are based upon 841 current smokers in 2007 that completed follow-up. We examined the proportion of baseline smokers who made a quit attempt, used any assistance when quitting (varenicline or other medications), or quit (30-day abstinence) by the 1 year follow-up. Analyses were weighted to account for the complex survey design.

Results: Of current smokers in 2007, 53% made an attempt to quit in the 12 months prior to 2007. Among those who attempted to quit (n=438), 54% reported using any form of assistance, including 47% who reported using any cessation medications. Among medication users (n=200), 44% used varenicline, 46% used some form of NRT, and 11% used bupropion SR. Varenicline users were similar to other medication users in terms of demographic and smoking characteristics. Overall, 18.6% (n=95) of baseline smokers who tried to quit reported being abstinent 1 year later. Abstinence rates were significantly higher for smokers who used any assistance when quitting (24.2% vs. 11.9% no assistance, p=0.02). Abstinence rates for smokers who used varenicline, NRT, or bupropion were similar (23.5%, 21.0%, 30.6%, respectively p=0.51). In a logistic regression model controlling for gender, age, income, education, and baseline smoking, the odds of abstinence for varenicline users was 0.98 [95% CI 0.7-2.4] (p=0.53) compared to smokers who used other cessation medications.

Conclusion: In this cohort, varenicline use was common among smokers making attempts to quit. The quit rate among varenicline users was not different compared to rates for smokers who used other pharmacological therapies.

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POS5-114 PERSONALISED TREATMENT FOR SMOKING CESSATION – FINAL EVALUATION OF A PILOT STUDY AND PLANS FOR A RANDOMISED CONTROLLED TRIAL
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Background: There are considerable individual differences in pharmacokinetic and pharmacodynamic response to nicotine. Conventional treatments are effective but quit rates are disappointing and might be improved with therapy tailored according to personal metabolic profile. Methods: Pharmacy based, multi-centre, pragmatic, observational study of a novel computerised programme giving personalised treatment recommendations (PTRs) based on questionnaire and pharmacogenetic data. Results: 210 smokers were invited to participate of whom supplied data necessary for personalised treatment and set a quit date. Median (range) age = 44 (17,78) years, cigarettes per day 19 (5,40), 24.3 (2,52) years smoking, 2 (0,15) previous quit attempts, 33% male. 38 of 54 participants (70% [95% CI 58%,83%]) quit at one week (validated by exhaled carbon monoxide) and 52 of 97 (54%) [95 CI 44%,64%]) at four weeks. Those lost to follow up were assumed still to be smoking. Crude cost to be smoking was £100.73 compared to UK National Health Service 2003 figure of £276.08. Conclusions: Personalised treatment for smoking cessation appears to be effective in the short term and may be more cost effective than current best practice. Plans for full clinical and economic evaluation in a randomised controlled trial will be presented.

This pilot study was completely funded by g-Nostics Ltd and run according to GCP guidelines with an independent External Study monitor.

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Thenatural history of smoking in psychiatrically disordered adolescents — a four-year follow-up

Marie Ditchburn* and Doug Sellman

Tobacco smoking is highly prevalent in adolescents presenting to mental health services; with rates of smoking about three times higher than in comparably aged community samples. Although some adolescent population studies have tracked smoking behaviour from adolescence to adulthood, little is known about the natural history of smoking in adolescents with mental health disorders. A sample of 93 adolescents aged 13-18 years presenting to an adolescent mental health outpatient service in Christchurch New Zealand during 1998 were followed up four years after their initial presentation. Of those originally interviewed, 59 took part in a comprehensive follow-up interview four years later. This research aimed to: 1) Determine the prevalence of tobacco smoking among patients presenting with symptoms of mental disorders; 2) Ascertain the overall stability of smoking and estimate regular smokers degree of nicotine dependence over time; and 3) Investigate potential factors and mechanisms underlying the continuation and discontinuation of smoking. 37.6% of the baseline sample had smoked five or more cigarettes a day for at least a month and had smoked within the past seven days; the a priori proxy measure of current nicotine dependence. Four years later, 67.7% of the sample met the criteria for nicotine dependence. Smoking was more likely if subjects had problematic alcohol use and symptoms of depression. Of the five subjects who quit smoking, four were parents of young children. Smoking was found to be common among adolescent mental health patients. For the vast majority of smokers first identified, smoking remained stable over time.

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Smoking and psychiatric disorders: does the order of onset play a role in the development of nicotine dependence?

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Emerging evidence has demonstrated that individuals with psychiatric disorders carry a large share of the burden of U.S. tobacco consumption and that despite increases in anti-smoking legislation, those experiencing psychiatric disturbance remain at particularly high risk for premature death from smoking related illness. To better understand this relationship, the present study evaluated the association between psychiatric disorders and specific smoking stages and examined whether the order of onset of smoking and psychiatric disorders predicts the clinical course of smoking behavior. Analyses are based on data from The National Comorbidity Survey-Replication (NCS-R), a nationally representative face-to-face household survey conducted between February 2001 and April 2003. Results indicate that individuals with nicotine dependence have significantly higher rates of each psychiatric disorder compared to regular, experimental and non-smokers, while generally similar rates of these disorders were seen among non-dependent smokers and non-smokers. Order of onset was found to be linked to the clinical course of smoking behavior as measured by the likelihood of developing nicotine dependence and the speed with which nicotine dependence symptoms onset following smoking initiation. Specifically, onset of anxiety disorders, mood disorders, substance use disorders and childhood onset disorders in the same year as smoking initiation showed the greatest cumulative incidence of nicotine dependence and in several cases a faster transition between smoking initiation and the onset of nicotine dependence symptoms. While these results do not conclusively resolve the question of causation, they do suggest that psychiatric disorders may play a role in the etiology of smoking when they are present in close temporal proximity to smoking initiation, providing a relatively short window of opportunity for intervening in the development of nicotine dependence within this particularly high-risk group.

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