SYM1A
IDENTIFICATION OF A PARTICULARLY VULNERABLE ADOLESCENT PERIOD FOR INCREASED NICOTINE SELF-ADMINISTRATION IN MALE AND FEMALE RATS

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Adolescence is a period in which the great majority of people become addicted to smoking begin tobacco use. In a rat model of nicotine self-administration, we have shown that both male and female rats self-administer substantially more nicotine during the adolescent period. During adolescence, males have a higher rate of nicotine self-administration than females. In male rats, this higher rate of self-administration decreases over a period of weeks as adolescents age into adulthood. Adolescent female rats also show a decrease in self-administration as they become adults, but they persist with higher levels of nicotine self-administration than females, that started in adulthood. In the current experiment, a detailed age-effect function was studied for male and female rats, which were given access to IV nicotine self-administration (0.03 mg/kg/infusion) for four weeks beginning in adolescence and continuing into adulthood. This was followed by a one-week cessation period and then the rats were given another week of nicotine access. The starting age for nicotine self-administration was 4, 5, 6, 7 or 8 weeks of age. As seen previously, adolescent males and females self-administered greater amounts of nicotine (mg/kg) than adults, with males self-administering more than females at the early stage of training. Interestingly, the adolescent-onset effect was not monotonic across ages. Preliminary results indicate that starting rats at six weeks of age causes a greater persistence of nicotine self-administration than either earlier or later ages. This was especially pronounced in females. This may indicate a vulnerable window within the adolescent period in which the initiation of nicotine self-administration is particularly problematic. Further research is needed to help identify neural systems under development during this period, which may underlie this mid-adolescent vulnerability.

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SYM1B
ENHANCED NICOTINE REWARD AND DIMINISHED NICOTINE WITHDRAWAL IN ADOLESCENT VERSUS ADULT RATS

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Although adolescent smoking is a major health and economic concern, the mechanisms that drive youth smoking are poorly understood. Smoking behavior in adults is mediated by a balance between the positive effects of nicotine and avoiding the negative consequences of nicotine withdrawal. However, the contribution of nicotine reward and withdrawal to adolescent smoking remain unclear. To address this issue, we compared conditioned place preference (CPP) produced by nicotine and conditioned place aversion (CPA) produced by nicotine withdrawal in adolescent and adult male rats. Animals were first tested for their initial preference for either of two distinct compartments of a conditioning apparatus. In the CPP study, rats were confined to their initially non-preferred side following administration of various doses of nicotine. On alternate days, rats received saline in their initially preferred compartment. Following conditioning, rats were re-tested for their preference. CPP was defined as an increase in the amount of time spent in the initially non-preferred side after conditioning. In the CPA study, rats were first made dependent on nicotine via subcutaneous pumps that produced equivalent blood nicotine levels in these age groups. To ensure nicotine dependence, conditioning began six days after pump implantation. Rats were confined to their initially preferred side following mecamylamine administration to precipitate withdrawal in that compartment. On alternate days, rats received saline in their non-preferred side. CPA was defined as a decrease in the amount of time spent in the initially preferred side after conditioning. Adolescents displayed CPP at low doses of nicotine that did not produce this effect in adults. Adolescents did not display CPA produced by nicotine withdrawal, whereas this effect was observed in adults. Our results indicate that adolescent rats display enhanced sensitivity to the rewarding effects of nicotine and diminished sensitivity to nicotine withdrawal compared to adults. These findings could constitute a powerful basis for increased vulnerability to nicotine dependence during adolescence.

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SYM1C  GENDER DIFFERENCES AMONG ADOLESCENT SMOKERS SEEKING CESSATION TREATMENT

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Gender and ethnic differences among adolescent smokers may carry important implications for interventions targeting this developmentally vulnerable population. While gender and ethnic differences in smoking patterns and cessation outcomes have been described among adult smokers, less corresponding information is available for adolescent smokers, due largely to fewer, smaller studies. However, biobehavioral characteristics of adolescent smoking predict adolescent cessation outcomes and provide insight into the addiction cycle. Gender and ethnic differences have been identified in the developmental trajectory (maintenance and progression) of smoking, although no formal mechanism for this has yet been confirmed. One possibility for these differences might be related to variations in nicotine metabolism among adolescents, whether they are purely sex-based or due to pharmacological agents such as hormonal contraceptives. Gender differences in the number or clinical quality of quit attempts and in the use of over-the-counter pharmacological aids to cessation (i.e., nicotine replacement therapy; NRT) may play an important role. We report salient findings from clinical research interviews and laboratory studies in adolescent heavy daily smokers seeking cessation treatment. Among gender differences, as compared to boys, girls progressed faster from first cigarette to daily smoking (mean ± SD: 0.9±1.1 versus 1.3±1.5 years, p<0.01). As measured by ratios of plasma 3 hydroxycotinine to cotinine concentrations, girls who used hormonal contraception showed more rapid nicotine metabolism (0.47) compared to boys (0.25) and compared to girls not using hormonal contraception (0.28) (p<0.0001). The significance of both trajectory and metabolism differences held after controlling for known ethnic differences between European Americans and African Americans. Within-ethnicity gender differences in quit attempts and use of NRT were also present. Research in a broader group of adolescent smokers is needed to understand the nature and extent of gender differences in nicotine metabolism, developmental trajectory and quit attempts as they relate to prevention and cessation approaches.

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SYM1D  IN UTERO TOBACCO EXPOSURE, GENDER, AND NICOTINE DEPENDENCE

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Clinical research suggests that in utero tobacco exposure is associated with increased cigarette experimentation among children, initiation of tobacco use and persistence of smoking particularly among female adolescents, and an increased risk for the development of lifetime tobacco dependence in adults. Our research study in adult treatment-seeking smokers was designed to determine whether reported in utero tobacco exposure influences the time from experimentation to daily smoking, whether in utero exposure influences the level of nicotine dependence in adult smokers, and whether there are gender differences in any of these effects. In a cross-sectional study (n=298), we examined the relationship between self-reported in utero tobacco exposure, age of smoking initiation, time to progression to daily smoking, and current level of nicotine dependence in adult smokers. Females who reported in utero exposure, compared to those who did not report such exposure, progressed more rapidly from initial to daily cigarette use[1.22 (1.65 years vs. 1.7 (3.4) years]. The opposite finding was found in exposed versus unexposed males [2.36 (2.4) vs 1.78 (5.89) years; p<0.04]. Women who reported in utero exposure had fewer past year quit attempts than women who reported no exposure (p=0.03). Regardless of gender, self-reported prenatal tobacco exposure was also associated with increased level of dependence in adult smokers (as measured by the FTND) and a greater severity of past withdrawal symptoms. We are seeking to extend these findings in looking at gender differences in smoking trajectories and initial subjective reactivity to tobacco in treatment-seeking smokers. Potential mechanisms for these findings will also be discussed.

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SYM2  HEALTH DISPARITIES AND TOBACCO USE

David W. Wetter, Ph.D.*, Carlos A. Mazas, Ph.D., University of Texas M.D. Anderson Cancer Center; Kolawole S. Okuyemi, M.D., Jasjit Ahluwalia, M.D., University of Minnesota; and James Sargent, M.D., Dartmouth Medical School

Health disparities are a critical public health problem and one of the two overarching goals of Healthy People 2010 is “To eliminate health disparities.” Tobacco use is a major determinant of disparities. Recent national data indicate that 58% of the socioeconomic gradient in male mortality is attributable to tobacco and the Trans-HR Cancer Health Disparities Progress Review Group called for the immediate implementation of evidence-based tobacco control strategies among the underserved. The goals of this symposium are to define tobacco-related disparities; highlight the profound gaps in our research knowledge; and present recent studies addressing tobacco use etiology and treatment among the underserved. Dr. Wetter will introduce the symposium, define tobacco-related disparities, and underscore the dearth of research among underserved populations. Dr. Mazas will present data from Adios al Fumar, a randomized clinical trial designed to increase the reach of the Spanish language smoking cessation counseling service of the National Cancer Institute's Cancer Information Service (CIS), and evaluate the efficacy of a culturally sensitive, proactive, telephone counseling program among Latinos. Adios increased calls over 45-fold, television was the most cost-effective method for reaching Latino smokers, and the counseling program was effective. Dr. Okuyemi will present data from four randomized controlled trials of pharmacotherapies among African American smokers (patch, spray, gum, bupropion). The overall results show only modest effects for pharmacocare among African American smokers. Dr. Sargent will present data from 6,522 U.S. adolescents who were surveyed at 8-month intervals for 2 years. Although African American and Latino adolescents had similar rates of experimentation, they were much less likely to progress to later stages of smoking over the course of the study, even though they were more likely African Americans in particular to exhibit profiliere characteristics of greater risk for progression to regular smoking. The results pose theoretical challenges for current models of smoking initiation. Dr. Ahluwalia will serve as discussant.

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SYM2A  TOBACCO-RELATED DISPARITIES AND RESEARCH NEEDS IN SMOKING CESSATION

David W. Wetter, Ph.D.* and Lorraine R. Reitzel, Ph.D., University of Texas M.D. Anderson Cancer Center

As an introduction to this symposium, tobacco-related disparities will be defined and the profound gaps in our knowledge related to the etiology and treatment of tobacco use among underserved populations will be highlighted using Latino smokers as an example. Contemporary thinking about health disparities involves looking beyond inequalities, to looking at inequities. Whereas inequalities refer to any differences among individuals or groups, inequities are unfair, unjust, or unnecessary differences. The National Cancer Institute’s Discovery-Development-Delivery continuum is useful for illuminating specific areas in need of further research among underserved populations. For example, with respect to disparities in discovery, both the Surgeon General’s Report on Tobacco Use Among U.S. Racial/Ethnic Minority Groups and the Eliminating Tobacco-Related Health Disparities: Summary Report concluded that there was inadequate empirical understanding of the proximal and distal determinants of tobacco use among the underserved. This lack of knowledge is a major barrier to the development of efficacious treatments for these populations. Similarly, while the Treating Tobacco Use and Dependence Clinical Practice Guideline reviewed hundreds of randomized controlled trials evaluating the efficacy of various treatments among the general population, a recent review of treatments among minority smokers found only five studies employing an experimental design that addressed Latino smokers and only one of those studies found a significant treatment effect. This finding illustrates the fact that the vast majority of extant treatments do not have demonstrated efficacy among underserved populations. Finally, major disparities exist in treatment delivery. For example, recent data demonstrate that Latinos are less likely than non-Hispanic Whites to receive cessation advice from their health care provider or utilize pharmacotherapy during a quit attempt. In sum, substantial inequities exist in our knowledge regarding etiology and treatment among underserved populations and there is a compelling need for more research addressing these groups.

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SYM2B DISPARITIES AND SMOKING CESSATION AMONG LATINOS
Carlos A. Mazas, Ph.D.*, Yisheng Li, Ph.D., Ludmila Coffa-Woerpel, Ph.D., David W. Wetter, Ph.D., UT M.D. Anderson Cancer Center; Patricia Daza, Ph.D., Menninger Clinic at the Baylor College of Medicine; Lynne Nguyen, M.P.H., The National Cancer Institute’s Cancer Information Service; and Rachel T. Foula, Ph.D., Simon Fraser University

Background: Latinos are the largest and fastest-growing minority population in the U.S., but there are exceedingly few data addressing the efficacy of cessation interventions among Latinos. Adios al Fumar was designed to: a) increase the utilization of the Spanish language smoking cessation counseling service of the National Cancer Institute’s Cancer Information Service (CIS), and b) evaluate the efficacy of a culturally sensitive, proactive, telephone counseling program among Spanish speaking smokers.

Methods: Adios al Fumar was a two-group randomized clinical trial. Spanish speaking smokers (N=297) were randomized to receive either standard counseling (SC) or enhanced counseling (EC). Various paid media were used to increase calls to the CIS Spanish language line and cost-effectiveness data were collected.

Results: The sample was very low SES (54% with household incomes less than $20,000, 51% with less than high-school education, and over 75% with no health insurance). Half of the samples were males and almost 95% were immigrants. Participants smoked 10 cigarettes/day with a mean of 7 on the Fagerstrom Test for Nicotine Dependence. Follow-up rates were over 80%, and 92% of EC participants received at least 3 of the 4 counseling calls. Calls to the CIS Spanish language smoking cessation program increased 45-fold (from 0.30 to 17.8 calls/month). Television was the most cost-effective method for generating callers. The unadjusted effect of SC approach was significant (OR = 2.4, P<0.07), but became significant after controlling for demographic and tobacco-related variables (OR = 3.8, P<0.04).

Conclusions: Adios al Fumar demonstrated that it is possible to reach, retain, and deliver an adequate dose of treatment to a very low SES Latino population that has been traditionally viewed as difficult to reach and hard to follow. Moreover, the findings suggest that a culturally appropriate, proactive, telephone counseling program, based on motivational interviewing and the Treating Tobacco Use and Dependence Clinical Practice Guideline, is effective among Spanish speaking Latinos. Supported by grants from the Minority Health Research and Education Program of the Texas Higher Education Coordinating Board and the National Cancer Institute (R01 CA94826; R01 CA98350; R25T CA57730).

SYM2B PHARMACOTHERAPY FOR SMOKING CESSATION AMONG AFRICAN AMERICANS
Kolawole S. Okuyemi, M.D.*, Janet L. Thomas, Ph.D., Michele L. Allen, M.D., and Jasjit S. Ahluwalia, M.D., University of Minnesota

African Americans are less successful in their quit attempts and experience disproportionately greater smoking-related morbidity and mortality compared to other ethnic groups. Research has shown that use of pharmacotherapy doubles quit rates compared to placebo; however, few studies have assessed efficacy of pharmacotherapy among African American (AA) smokers. This presentation will discuss current evidence regarding efficacy of pharmacotherapy for smoking cessation among AAs and will review data from 4 randomized controlled trials. The first study assessed the efficacy of nicotine patch among 410 AAs and showed that nicotine patch increased short-term (10 weeks) quit rates compared to placebo (21.5% vs. 13.7%, p=0.03); however, treatment effect was not significant at 6 months. The second study evaluated efficacy of nicotine patch vs. nasal spray among 299 smokers, 38% of whom were ethnic minorities. Results showed that ethnic minorities (predominantly AAs) had higher abstinence rates at 6 months with the nasal spray. In the third study, nicotine gum and counseling were evaluated in a 2X2 trial among 755 AA light smokers. Nicotine gum performed no better than placebo at 6 months (14.2% vs. 11.1%, p=0.232); however, there was a counseling effect with health education performing better than motivational interviewing (16.7% vs. 8.5%, p<0.001). The fourth study assessed efficacy of sustained-release bupropion among 800 AA smokers. Quit rates were significantly better for bupropion than for placebo at 6 months (21.0% vs. 13.7%, p=0.02). These studies suggest modest effects of pharmacotherapy for smoking cessation among AAs. Further research is needed to develop more effective pharmacotherapies in order to eliminate smoking-related health disparities experienced by AAs. Supported by grants from the National Cancer Institute (R01CA91912; R01CA77856; K07CA90334).

SYM2C RACIAL/ETHNIC DIFFERENCES IN SMOKING ONSET AND PROGRESSION AMONG US ADOLESCENTS
James Sargent, M.D.*, Keilah A. Worth, Ph.D., Dartmouth Medical School; Thomas A. Wills, Ph.D., Albert Einstein College of Medicine; and Fredrick X. Gibbons, Ph.D., Iowa State University

Objective: To assess smoking onset and progression by race/ethnicity in a nationally representative sample of U.S. adolescents.

Method: 6522 U.S. adolescents (62% White (W), 11% Black (B), 19% Hispanic (H), 8% other (O)) were enrolled in a random digit dial telephone survey and resurveyed at 8-month intervals, 8M (n = 5503), 16M (n = 5019), and 24M (n = 4575). Outcomes by race/ethnicity included susceptibility to smoke (SS), smoking expectancies (SE), tried smoking (TS), and lifetime use of 1 or more cigarettes (LS).

Results: There were no large racial/ethnic differences in SS or TS at any timepoint. For example, among baseline never smokers, SS was similar in B and W adolescents (W=15.5%, B=16.2%, H=18.7%, O=14.1%, p=0.05), and there were no overall differences in TS (W=10.4%, B=12.1%, H=10.4%, O=10.9%, p=.59). Baseline smoking rates were much less likely to progress to LS (e.g., 24M LS (W=12.1%, B=5.4%, H=9.2%, O=11.1%, p<0.001)). Further analyses examined variables that might help account for the ethnic differentials in smoking progression. Lower exposure to parental and sibling smoking partly explained lower LS for Hs. For Bs, lower lifetime risk persisted even after accounting for 16 predictors, including familial and peer smoking, maternal parenting style, sensation seeking, and access to cigarettes in the household (adjusted odds of 24M LS for Bs was 0.30 [0.17, 0.52]). Bs seemed generally less reactive to social influences for smoking.

Conclusions: Although B and H adolescents had similar rates of experimentation, they were much less likely to progress to later stages of smoking. Lower exposure to family smoking partly explained this difference for Hs, but not Bs. Ethnic differentials in regular smoking are substantial and currently are not well understood. The lower rate of smoking among B adolescents despite apparently higher risk is a particular theoretical challenge. Supported by a grant from the National Cancer Institute (R01 CA77026).

SYM2D NICOTINE IN NON-NEURONAL CELLS
Neal Benowitz, Phillip Dennis, John Cooke, Carolyn Dresler*

Nicotine has been used for several decades with demonstrated safety and efficacy for smoking cessation in clinical trials. There have been no trials or epidemiologic studies examining the effect of long-term medicinal nicotine use. However, it is undoubtedly much safer than persistent smoking with its attendant delivery of numerous carcinogens and toxins. Also, data particularly from Sweden, has suggested that long-term use of low nitrosamine snus, which still delivers sufficient nicotine to support addiction, has a better safety profile than smoking. However, even studies in Sweden examining smokeless tobacco finds risks for heart disease and pancreatic cancer. In the past several years, exciting emerging science has been describing the effect of nicotine on non-neuronal cells and its potential pivotal role in stimulating angiogenesis, cellular proliferation and inhibition of apoptosis. These mechanisms work through similar nicotinic acetylcholine receptors as those found in the central nervous system and its reward pathways. All of this information provides additional emphasis for the importance of smoking cessation and mechanistic reasons for different clinical effects of smoking. In addition, there should be prospective trials examining these effects in people who use either nicotine or proposed “harm reduction” products long-term. As scientists outside of the usual SRNT environments are performing this research, this symposium would bring intriguing new information.

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ROLE OF THE ENDOTHelial nACH RECEPTOR IN PATHOLOGICAL ANGIOGENESIS
John Cooke, M.D., Ph.D.*, Stanford University

A novel angiogenic pathway is mediated by endothelial nicotinic acetylcholine receptors. In preclinical studies, activation of this pathway, by nicotine or second hand smoke, is involved in tumor angiogenesis and tumor growth. In a murine model, tumor growth was increased by nicotine or tobacco smoke, an effect that was associated with a significant increase in tumor vessels. The increase in tumor angiogenesis and growth was largely blocked by the nACh receptor antagonist, mecamylamine. Intriguingly, tobacco smoke also increased levels of the angiogenic factor vascular endothelial growth factor (VEGF); this effect is also blocked by mecamylamine. The growth of atherosclerotic plaque is associated with neovascularization and inflammation. Nicotine accelerates plaque neovascularization and plaque growth in apoE deficient hypercholesterolemic mice. A major component of tobacco-related macular degeneration is retinal neovascularization and permeability. Nicotine accelerates retinal neovascularization in a murine model of retinal neovascularization, an effect blocked by mecamylamine. Retinal edema, due to increased permeability of the neovessels, contributes to loss of visual acuity in patients. Nicotine increases the permeability of the cerebrovasculature, an effect blocked by antagonists of the nAChR. Conversely, local application of nAChR agonists mobilizes bone marrow derived endothelial progenitor cells contributes to angiogenesis. We have documented that nACh receptor stimulation causes the mobilization of both endothelial (vascular) and hematopoietic (blood) cells. To conclude, nicotine may contribute to tobacco-related disorders by stimulating cholinergic angiogenesis. However, stimulation of nicotinic acetylcholine receptors may also have beneficial effects. A greater understanding of the signaling and functions of non-neuronal nicotinic acetylcholine receptors may lead to new therapeutic avenues.

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ROLE OF NICOTINIC RECEPTORS IN NORMAL OR TRANSFORMED BRONCHIAL CELLS
Phillip Dennis, M.D., Ph.D.*, Cancer Therapeutics Branch, Center for Cancer Research NCI, USA

Retrospective studies have demonstrated lower response rates and shorter median survival in patients who continue to smoke after their diagnosis of cancer. We have tested two tobacco components, nicotine and the tobacco-specific carcinogen (NNK) and have found that both active the Akt pathway and increase lung cancer cell proliferation and survival. Both nicotine and NNK rapidly and potently, activated Akt in non-small cell lung cancer (NSCLC) and small cell lung cancer. Since nicotine or NNK bind to cell surface nicotinic acetylcholine receptors (nAChR) we tested for expression of nine alpha and three beta nAChR subunits in five NSCLC cell lines and two types of primary lung epithelial cells. NSCLC cells express multiple nAChR sub-units in a cell line specific manner. Cellular outcomes after nicotine or NNK administration were also assessed. Nicotine or NNK increase proliferation of NSCLC cells in an Akt-dependent manner. Despite similar induction of proliferation, only nicotine decreased apoptosis caused by serum deprivation and/or chemotherapy. These results identify nicotine or NNK induced, Akt-dependent proliferation and NFkB-dependent survival as cellular processes that could underlie the detrimental effects of smoking in cancer patients.

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NICOTINE SAFETY FOR SMOKING CESSATION
Neal Benowitz, M.D.*, University of California-San Francisco

This review will discusses the known effects of nicotine without tobacco smoke and interprets the available data on cardiovascular risk during nicotine replacement therapy (NRT). Nicotine replacement products have been approved for over the counter sale in the United States for several decades. Smokers with cardiovascular disease are advised to seek physician counseling before using nicotine products, but information regarding the safety of these products in such patients is not readily available to most physicians. Nicotine may contribute to cardiovascular disease, presumably by hemodynamic consequences of sympathetic neural stimulation and systemic catecholamine release. However, there are many potential cardiovascular toxicities in cigarette smoke other than nicotine. The doses of nicotine obtained by regular cigarette smoking generally exceed those delivered by NRTs, and the cardiovascular effects of nicotine are, in general, more intense when delivered rapidly by cigarette smoking than the slower delivery by transdermal nicotine or nicotine gum. NRT does not appear to increase blood coagulability, a major risk factor for acute cardiovascular events. Clinical trials of NRT in patients with underlying, stable coronary disease suggest that nicotine does not increase cardiovascular risk. At worst, the risks of NRT are no more than those of cigarette smoking. NRT has been studied in a large number of smoking cessation studies, and the safety profile has been more than satisfactory. The risks of NRT for smokers, even for those with underlying cardiovascular disease, are small and are substantially outweighed by the potential benefits of smoking cessation. Studies on the effect of long term nicotine use have not been done.

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NICOTINE IN NON-NEURONAL CELLS
Carolyn Dresler, M.D.*, Head, Tobacco and Cancer Group, International Agency for Research on Cancer

Over the past decade, there has been a steady increase in the amount of information concerning the effects of nicotine on non-neuronal cells. The various nicotinic acetylcholine receptors (nAChR) that are involved, both in normal and transformed cells are slowly being delineated with this research, but as yet, there remains lack of clarity on the specific function of each subtype of nAChR in the different cell types tested. Additionally, the various signal transduction pathways that are stimulated or inhibited by nicotine administration are still being defined. At present, it is clear that various subtypes of the nAChR are present on most cell lines tested, which are responsive to nicotine administered in the concentrations that one would see either with tobacco use or nicotine replacement therapy (NRT). The clinical utility of these effects are being considered, but there are patents already filed based on these data. The clinical applications still remain to be defined. As tobacco control has been embracing ‘harm reduction’ of various descriptions, it would be important to consider these emerging research results. In addition, it is important to consider the long-term use of NRT, and to assess the clinical effects from such use. Undoubtedly, NRT has less risk than persistent smoking with it attendant delivery of greater than 60+ carcinogens. However, perhaps studies should be considered to demonstrate the safety of long term nicotine use beyond that required from tobacco cessation.

No funding.

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**SYM4** WHAT ROLE IF ANY DOES DOPAMINE PLAY IN CIGARETTE SMOKING?

Robert E. Sorge, Ph.D., Paul B.S. Clarke, Ph.D.*, McGill University; Derek van der Kooy, Ph.D., University of Toronto; Alain Dagher, M.D., Montreal Neurological Institute; Arthur L. Brody, M.D., University of California at Los Angeles.

Dopamine is widely thought to play an important role in nicotine dependence, but quite what this role may be is far from settled. The aim of this session is to highlight major points of agreement and disagreement in this debate. Arguably, the strongest evidence that nicotine's reinforcing effects are mediated by dopamine comes from intravenous self-administration studies in rats. The validity of this widely-used animal model will be questioned by Robert Sorge. In particular, he will show that, contrary to popular belief, ultra-rapid (“bolus”) infusions of nicotine are not required, nor are they necessarily more reinforcing than slower infusions which more nearly model the kinetics of nicotine delivery in smokers. He will also discuss the critical role of sensory cues in supporting drug self-administration. Derek van der Kooy will present studies using conditioned place preference that support the novel and controversial notion that dopamine mediates aversive rather than rewarding effects of nicotine. Alain Dagher will describe PET and fMRI imaging studies examining the effects of cigarette smoking and cigarette craving on the dopamine system. These studies aim to understand the neurological factors involved in addiction and relapse. Arthur Brody will report that smokers with genes associated with low resting dopamine tone have greater smoking-induced (phasic) dopamine release than those with alternate genotypes. He will also present PET imaging data suggesting that alpha4 beta2 nAChRs are saturated in the brains of cigarette smokers, and will propose a role for desensitized receptors in the motivation to smoke. Lastly, Paul Clarke (Discussant) will examine all the above—and more—with a critical eye.

**SYM4A** INTRAVENOUS NICOTINE SELF-ADMINISTRATION IN RATS — WHAT DOES IT MODEL?

Robert E. Sorge, Ph.D.*, McGill University; Jane Stewart, Ph.D., Concordia University; Paul B.S. Clarke, McGill University.

The idea that nicotine's reinforcing effects occur via dopamine release relies heavily on animal studies employing intravenous self-administration and it is believed that nicotine's reinforcing effects depend critically on rapid “bolus” delivery to the brain. In animal self-administration studies ultra-rapid (1-3 sec) nicotine infusions are employed because it is generally thought that reliable performance depends on this. There is, however, direct evidence in humans to suggest that, after a cigarette puff, nicotine is delivered rather slowly to the brain (e.g. Rose et al 1999). To test this discrepancy, we compared the effects of infusion duration (3, 10 or 30 sec) on nicotine self-administration in male rats. Three groups of rats were trained to self-administer nicotine (FR1, 30 sec timeout and cue presentation) at one of two infusion durations on alternate days resulting in the following combinations: 3 vs. 10, 3 vs. 30, or 10 vs. 30 sec. Total intake of nicotine in 2 hours at the 10- and 30-sec durations was similar regardless of the duration combination; however intake was significantly lower when nicotine was infused over 3 sec. To investigate the preference for a specific infusion duration, a group of rats was prepared with dual intravenous catheters and given simultaneous access to levers paired with either a 3- or 30-sec infusion. Intake of nicotine was greater at the 30-sec infusion duration. These experiments indicate that although rapid infusions of nicotine may be necessary for the development of behavioral sensitization (AN Samaha et al 2005), rapid infusions are not essential for the establishment of nicotine self-administration in rats. Unlike other drugs, evidence suggests that the reinforcing effects of nicotine may depend critically on additional factors. For example, it has been suggested that nicotine enhances the reinforcing effects of other stimuli. To further examine this, we investigated responding for combinations of nicotine and sensory stimuli possessing different intrinsic rewarding values. The pattern of results helps to clarify the nature of nicotine's interactions with other stimuli.

**SYM4B** BLOCKADE OF MESOLIMBIC DOPAMINE TRANSMISSION DRAMATICALLY INCREASES SENSITIVITY TO THE REWARDING EFFECTS OF NICOTINE IN THE VENTRAL TEGMENTAL AREA

Derek van der Kooy, Ph.D.*, University of Toronto

Nicotine produces rewarding and aversive motivational effects in humans and other animal species. Here, we report that the mammalian ventral tegmental area (VTA) represents a critical neural substrate for the mediation of both the rewarding and aversive properties of nicotine. We demonstrate that direct infusions of nicotine into the VTA can produce both rewarding and aversive motivational effects. While the rewarding effects of higher doses of nicotine were not attenuated by dopamine (DA) receptor blockade, blockade of mesolimbic DA signaling with either systemic or intranucleus accumbens (NAc) neuretic preconditioning potentiated the sensitivity to nicotine's rewarding properties over a three-order-of-magnitude dose range. Furthermore, the behavioural effects of lower doses of intra-VTA nicotine were reversed, switching the motivational valence of nicotine from aversive to rewarding. Our results suggest that blockade of mesolimbic DA signaling induced by neureletic medications may block selectively the aversive properties of nicotine, thus increasing the vulnerability to nicotine's rewarding and addictive properties by inducing a unique, drug-vulnerable phenotype.

**SYM4C** FUNCTIONAL NEUROIMAGING OF CIGARETTE ADDICTION

Alain Dagher, M.D., Montreal Neurological Institute

Exposure to stimuli previously paired with drug use (i.e., conditioned cues) can induce various conditioned responses in drug addicts, including craving and drug seeking. Several functional brain imaging studies have also investigated the neural response to conditioned drug cues for various drugs of abuse, including nicotine. In these studies, drug cues elicit activation of neural circuitry thought to encode the motivational and emotional value of the drug, and play a role in the planning and control of behavior. The brain regions include the anterior cingulate cortex, orbitofrontal cortex, dorsolateral prefrontal cortex, amygdala, and insula. We have shown that the brain response to conditioned cues in cigarette smokers is modulated by contextual factors, such as drug availability and withdrawal. Our research and other work suggest that the prefrontal cortex has an important role in modulating the response to drug cues. Stress has been identified as a major contributor to both drug seeking and relapse in addicted individuals. Exposure to stress increases self-reports of craving in drug users, including cigarette smokers. However, little is known about the neural mechanisms by which stress perpetuates drug taking, or how stress and conditioning factors interact to augment the vulnerability to drug abuse. One possibility is that stress interferes with frontal lobe function, allowing drug cues to become more salient and thus have a greater ability to trigger drug seeking by the individual. We tested this possibility by exposing otherwise healthy smokers to stress while undergoing fMRI scanning and viewing cigarette videos. We found that stress increased the response to drug cues in brain regions involved in motivation and behavioral activation, providing a possible mechanism for stress-induced drug relapse.

**SYM4** ADDICTION

**SRNT ◆ Symposia**
SYM4D

POSITRON EMISSION TOMOGRAPHY STUDIES OF THE BRAIN DopAMINE PATHWAY IN CIGARETTE SMOKERS

Arthur L. Brody, M.D.*, University of California at Los Angeles

Laboratory animal studies have reported that stimulation of nicotinic acetylcholine receptors (nAChRs) by nicotine in the ventral tegmental area results in dopamine (DA) release in the ventral striatum/nucleus accumbens and positive reinforcement. Studies of humans using positron emission tomography (PET) scanning are beginning to confirm and expand upon these findings. Using PET scanning, our group demonstrated both the extent of smoking-induced occupancy of one alpha-beta2 nAChRs in the brainstem and the degree of smoking-induced DA release in the ventral striatum. These studies show that cigarette smoking in amounts used by typical daily smokers saturates brain nAChRs and that DA release in the ventral striatum correlates with the smoker’s subjective reduction in cigarette craving. Furthermore, initial PET studies demonstrate links between gene variants for components of the brain DA system and smoking-induced DA release. In addition, initial studies will be presented examining the effects of smoking on regular nicotine cigarettes versus des- nicoitized cigarettes on these brain systems to differentiate pharmacological effects of nicotine from the broader effects of smoking/tobacco.

National Institute on Drug Abuse (R01 DA20872), a Department of Veterans Affairs Merit Review Award, and the Tobacco-Related Disease Research Program (11RT- 0024).

SYM5

FACTORS THAT IMPACT NICOTINE BIOAVAILABILITY: FINDINGS FROM THE TRANSDISCIPLINARY TOBACCO USE RESEARCH CENTERS PROGRAM

Presenting Authors: Rachel F. Tyndale, Ph.D., University of Toronto, Canada; Sharon Murphy, Ph.D., University of Minnesota, USA; Cliff Watson, Ph.D., Centers for Disease Control and Prevention, USA; David Hammond, Ph.D., University of Waterloo, Canada; and Neal Benowitz, M.D., University of California, San Francisco, USA; Organizer: K. Michael Cummings, Ph.D., M.P.H.*, Roswell Park Cancer Institute, USA

Nicotine is the major pharmacologically active alkaloid in tobacco and the reason main reason why many tobacco users struggle to quit. Nicotine creates dependence by activating the dopaminergic reward system in the brain. Physiologic withdrawal symptoms that occur when nicotine is no longer administered reinforce continued nicotine administration to avoid withdrawal. Extrapolating from this evidence has led to the development of tobacco dependence pharmacotherapy based upon the concept of replacing and blocking the effects of nicotine in the brain. Evidence also suggests that contemporary tobacco products are carefully engineered to deliver finely graded doses of nicotine to the tobacco user addicted. While the central role of nicotine in tobacco use behavior is well accepted what remains unknown is why there is such wide variation in how tobacco users respond to different tobacco products and stop medications. This symposium includes four papers from the NIH supported Transdisciplinary Tobacco Use Research Centers Program and their collaborators that examine various factors help explain individual variation in nicotine bioavailability. The four papers included in this session will provide insight about how agent (i.e., cigarette design, stop smoking medications) and host (genetic and demographic) factors interact to influence the bioavailability of nicotine and impact smoking behavior and response to pharmacologic treatments for nicotine dependence. The paper by Rachel Tyndale will explore the role of genetic variation in nicotine metabolism and may affect bupropion treatment outcome. Among smokers in the CYP2B6*6 group (at least one allele) bupropion produced higher abstinence rates than placebo at the end of treatment (32.5% vs. 14.3%, p=0.01) and at the 6 month follow-up (31.2% vs. 12.9%, p=0.008). In contrast, bupropion was no more effective than placebo for smokers in the CYP2B6*1 group at the end of treatment (31.0% vs. 31.6%, p=0.93) or at the 6 month follow-up (22.0% vs. 21.5%, p=0.94). There was a significant genotype by treatment interaction at the end of treatment (OR=2.97 (1.05- 8.40) p=0.04), which was similar at 6-month follow-up (OR=2.98 (0.98-9.06) p=0.05). These data suggest that smokers with the CYP2B6*6 genotype may have a higher liability to relapse on placebo, and that they may be good candidates for bupropion treatment for smoking cessation. Together these data indicated that genetic variation in CYP enzymes may be useful for optimizing smoking cessation treatment.

This study was supported by a CRC (RFT), CIHR tobacco training scholarships (AML, VM) and grant R01 DA20872 (RFT, NB), CIHR grant MOP53248 (RFT) and a Canada Research Chair in Pharmacogenetics (RFT).

SYM5A

GENETIC VARIATION IN CYP2A6 AND CYP2B6 ALTERS SMOKING CESSATION OUTCOMES

Rachel F. Tyndale, Ph.D.*, Anna M Lee, Ph.D., Viba Malaiyandi, M.Sc., Ewa Hoffmann, M.Sc., University of Toronto, Canada; Neal Benowitz, M.D., University of California, San Francisco, USA; Freda Patterson, Chris Jepson, Ph.D., Caryn Lerman, Ph.D., University of Pennsylvania, Pennsylvania

We investigated whether genetic variation in nicotine (CYP2A6) and bupropion (CYP2B6) metabolizing enzymes altered smoking cessation. Caucasian smokers with slow versus normal nicotine metabolism, predicted by CYP2A6 genotypes and by 3-hydroxytocotine to cotinine ratios (3HC/COT), smoked fewer cigarettes per day at baseline (20 vs. 24, p<0.04). In an open-label nicotine replacement therapy (NRT) trial slow metabolizers on nicotine paste had higher nicotine plasma levels (22.8 vs. 15.8 ng/mL, p=0.02), while using the same numbers of patches/week. The odds of abstinence were reduced by almost 30% with each increasing quartile of 3HC/COT ratio (OR=0.72 (0.57-0.90) p=0.006). With nicotine spray use slow metabolizers achieved similar nicotine levels (5.8 vs. 8.0 ng/mL, p=0.82) by using fewer doses of nicotine spray/day (4.8 vs. 10.5, p<0.02) and the 3HC/COT ratio did not predict cessation (OR=1.05 (0.83-1.33) p=0.68). Thus variation in CYP2A6 influences smoking behavior, NRT usage, nicotine plasma levels and cessation rates with NRT. Genetic polymorphisms in CYP2B6, such as CYP2B6*6, can alter bupropion metabolism and may affect bupropion treatment outcome. Among smokers in the CYP2B6*6 group (at least one allele) bupropion produced higher abstinence rates than placebo at the end of treatment (32.5% vs. 14.3%, p=0.01) and at the 6 month follow-up (31.2% vs. 12.9%, p=0.008). In contrast, bupropion was no more effective than placebo for smokers in the CYP2B6*1 group at the end of treatment (31.0% vs. 31.6%, p=0.93) or at the 6 month follow-up (22.0% vs. 21.5%, p=0.94). There was a significant genotype by treatment interaction at the end of treatment (OR=2.97 (1.05- 8.40) p=0.04), which was similar at 6-month follow-up (OR=2.98 (0.98-9.06) p=0.05). These data suggest that smokers with the CYP2B6*6 genotype may have a higher liability to relapse on placebo, and that they may be good candidates for bupropion treatment for smoking cessation. Together these data indicated that genetic variation in CYP enzymes may be useful for optimizing smoking cessation treatment.

This study was supported by a CRC (RFT), CIHR tobacco training scholarships (VMA, VM) and grant R01 DA20872, a Department of Veterans Affairs Merit Review Award, and the Tobacco-Related Disease Research Program (11RT- 0024).

SYM5B

FREE NICOTINE LEVELS IN POPULAR CIGARETTE BRANDS

Clifford H. Watson, Ph.D.*, Ameer Tavakoli, Ph.D., Christina Vaughn, B.S., David L. Ashley, Ph.D., Centers for Disease Control and Prevention, Atlanta, USA

Nicotine’s acid-base properties play a key role in its chemical characteristics, as the more volatile non-protonated, or free-base, form has increased bio-availability. Changes in nicotine delivery and rate of absorption due to changes in the ratio of protonated to free-base forms may affect addiction potential. One subjective measure of nicotine is “impact” that has consistently been used by the tobacco industry for gauging smoker’s sensations in the mouth and throat and has been viewed as an important characteristic of a successful cigarette. The sensory “impact” associated with tobacco smoke has been associated with nicotine, particularly the fraction of nicotine that is present in the free-base form. As a result, it is important to understand the factors that influence the ratio of free-base to protonated nicotine in mainstream smoke. We have refined our method for measuring total and free-base nicotine to achieve higher throughput. Smoke samples, generated using various smoking protocols and conditions, were collected using linear smoking machines. Gas and particle phase measurements were made for a variety of compounds including free-base and total nicotine. An examination of multiple brands having a wide range of FTC tar and nicotine deliveries found that the ratio of nicotine to 3HC/COT, smoked fewer cigarettes per day under the FTC smoking regimen were similar for all delivery categories. However, as is the case for total nicotine, different amounts of free-nicotine are delivered under different smoking regimes. For example, the ratio of free-base to total nicotine under the Canadian intense machine smoking regimen is decreased relative to the FTC regimen. Various factors were found that influence free-base nicotine delivery in mainstream tobacco smoke. Preliminary results indicate that chemical and physical characteristics of cigarette design such as filter ventilation can influence the ratio of free-base to total nicotine. Other parameters are also under consideration.

Centers for Disease Control and Prevention.

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SYM5C  NICOTINE METABOLISM: BEYOND CYP2A6 GENOTYPE

Sharon E. Murphy, Ph.D.*, Jeannette M. Zinggeler, M.P.H., Jesse Mason, Dorothy K. Hatsukami, Ph.D., and Linda B. von Weymarn, Ph.D., University of Minnesota

Nicotine is primarily metabolized by P450 2A6-catalyzed 5’-oxidation. Genetic variants in this enzyme clearly influence nicotine metabolism and hence its bioavailability. However, CYP2A6 genotype alone is unlikely to explain the large variation in the extent and rate of nicotine metabolism among smokers. In this paper data will be presented exploring the affect of nicotine on its own metabolism and the role of glucuronidation in nicotine metabolism. In vitro, we have demonstrated that the metabolism of nicotine by both P450 2A6 and the extrahepatic enzyme, P450 2A13, results in the time and concentration-dependent inactivation of these enzymes. Recent data support a secondary metabolite of nicotine, a metabolite of the 5’-iminium ion, as the reactive species responsible for the inactivation of P450 2A13 and P450 2A6. It is unclear how nicotine-mediated inactivation may contribute to nicotine bioavailability in smokers. However, it has been reported by Benowitz et al. that the rate of nicotine clearance in smokers is longer than that in non-smokers, and in smokers who have abstained from smoking. In addition to P450 2A6-catalyzed 5’-oxidation, nicotine is metabolized by UGT-catalyzed N-glucuronidation. In smokers nicotine glucuronidation typically accounts for less than 10% of total nicotine metabolism. However, the extent of nicotine glucuronidation varies significantly among individual smokers, and it has been reported that nicotine glucuronidation levels are lower in black smokers compared to white smokers. We have recently confirmed in a study of nicotine patch users, that blacks excreted less nicotine as its N-glucuronide conjugate than did whites. The average percent of the total nicotine excreted as nicotine-N-glucuronide, in 24 h urine was 17.5 ± 13.0 (n=47) in blacks and 31.2 ± 16.9 (n=35) in whites. The lower level of nicotine glucuronidation by blacks may contribute to the higher cotinine levels and lower cigarette consumption that has been observed in this ethnic group.

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SYM5D  CIGARETTE YIELDS AND HUMAN EXPOSURE: A COMPARISON OF ALTERNATIVE TESTING REGIMENS

David Hammond, Ph.D.*, and Geoffrey T. Fong, Ph.D., University of Waterloo, Waterloo, Ontario, Canada; Michael Cummings, Ph.D., M.P.H., Richard J. O’Connor, Ph.D., Roswell Park Cancer Institute Buffalo, Buffalo, New York, USA; Gary A. Giovino, Ph.D., State University of New York at Buffalo, Buffalo, New York, USA; Ann McNeill, Ph.D., The University of Nottingham, Nottingham, United Kingdom

There is general agreement that the testing protocol for measuring cigarette smoke emissions—the ISO regime—is an inappropriate mechanism for evaluating human exposure. Alternative smoking regimes have been introduced in Canada and Massachusetts; however, these regimes have not been evaluated against human smoking behaviour and bio-measures of human exposure. Data from this research compare measures of smoke volume and nicotine uptake among human smokers against the puffing parameters and nicotine emissions generated by five different machine smoking regimes: (1) ISO; (2) Massachusetts; (3) Canadian; (4) a "compensatory" regime; and (5) a "human mimic" regime. Measures of smoke volume and puffing behaviour were recorded for 51 smokers who used a portable smoking topography device for 3 one-week trials. Measures of salivary cotinine were taken at the completion of each week. The cigarette brands smoked by participants were then machine-smoked under five testing regimes, including a “human mimic” condition where brands were machine smoked using the puffing behaviour recorded from human smokers. The total volume of smoke collected from each cigarette and the nicotine emissions were recorded. The results indicate that none of the four machine smoking regimes adequately reflected “human mimic” nicotine emissions. In addition, none of the four smoking regimes generated nicotine emissions that were closely associated with actual nicotine uptake in humans. The implication of these results for product testing, the provision of information to consumers, and the use of cigarette emissions will be discussed.

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SYM6  EXPANSION OF NON-CIGARETTE TOBACCO PRODUCTS: CURRENT RESEARCH AND POLICY IMPLICATIONS

Matthew Barry, M.P.A.*, Campaign for Tobacco Free Kids; Cristine Delnevo, Ph.D., M.P.H., UMDNJ-School of Public Health; Thomas Eisenberg, Ph.D., Virginia Commonwealth University; Dorothy K. Hatsukami, Ph.D., University of Minnesota; Katherine E. Kemper, GlaxoSmithKline

The goal of this symposium is to focus scientific and policy attention on non-cigarette tobacco products. This symposium will present research (e.g., prevalence, toxicity/biomarker data, consumer risk perceptions) on various non-cigarette tobacco products, including cigars, smokeless tobacco (SLT) and waterpipes, and the panel will discuss the policy implications stemming from this data as well as identifying key research questions requiring further study that will better inform policy makers’, consumers’ and treatment professional’s responses to non-cigarette tobacco products. Mr. Barry will provide an overview of the key research and policy issues raised by the use of non-cigarette tobacco products, whether the research and policy communities have neglected non-cigarette tobacco products relative to cigarettes, and why these products warrant the attention of scientists and policymakers. Dr. Delnevo will present data on cigar prevalence in the U.S., including little and flavored cigars, and how these products are competing with cigarettes for market share. Dr. Eisenberg will present prevalence and toxicity/biomarker data on waterpipes, including consumer misperceptions of risk associated with waterpipe use. Dr. Hatsukami will present toxicity/biomarker data on SLT, particularly low-nitrosamine SLT, and discuss how these products are viewed in the broader “harm reduction” debate. Ms. Kemper will present focus group data on smoker/consumer perceptions of new SLT products (CAMEL Snus, Taboka) and the impact of these products and how they are marketed on interest in switching from cigarettes to SLT and on quitting tobacco use. Mr. Mitch Zeller will serve as the discussant to the panel.

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SYM6A  SMOKELESS TOBACCO: HOPE FOR THE FUTURE?

Dorothy K. Hatsukami, Ph.D.*, University of Minnesota

The use of oral non-combustible products as a means of reducing harm in cigarette smokers has engendered a great deal of controversy. Most public health officials agree that smokeless tobacco (SLT) use is associated with less disease risk than smoking cigarettes. Furthermore, if smokers completely switched to SLT use, then the relative risk of disease should theoretically reduce dramatically. In Sweden, the increased uptake of SLT, or snus, has been used to explain the decrease in cigarette smoking among men with a consequent decrease in lung cancer mortality. Whether or not this “Swedish experience” will translate to other cultures is unknown and some public health officials believe that it would be unlikely. Concerns over the uptake of SLT among youth and the continued use of tobacco products among adults have been raised, particularly in an unregulated environment. Nonetheless, there are strong advocates for substituting cigarettes for SLT as a method to reduce harm. Unfortunately, the toxicity and addiction potential vary greatly across the tobacco products, along with the risk for disease. The goal of this presentation is to examine the toxicity and nicotine levels across the various brands of oral non-combustible tobacco products, focusing particularly on the new low-nitrosamine products. In addition, studies on the effects of switching from cigarettes to these products will be examined. Finally, the context in which public health community would be willing to endorse the use of SLT as a harm reduction method will be discussed, which include product regulation, control over promotion and advertisement, and strong policies to reduce the prevalence of all tobacco use.

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SYM6B  USING A WATERPIPE TO SMOKE TOBACCO: PREVALENCE, TOXICANT EXPOSURE, EFFECTS, AND RESEARCH NEEDS

Thomas Eissenberg, Ph.D.*, Virginia Commonwealth University

A waterpipe has a head, body, water bowl, and hose. The head is filled with sweetened and flavored tobacco that is heated by charcoal, producing smoke that passes through the water and the hose to the user. Waterpipes have been used to smoke tobacco for centuries in some world regions, and recent data suggest that waterpipe use is spreading across the globe. In the U.S., where 200-300 waterpipe cafes have opened in the last 3-5 years, waterpipes are particularly popular among university students; surveys indicate 15-20% of respondents report past 30-day waterpipe use. This growing popularity may reflect the common but unsubstantiated belief that waterpipe use is less lethal than cigarette smoking. In fact, like cigarette smoke, waterpipe smoke contains nicotine, carbon monoxide (CO), and “tar.” Moreover, the smoking behavior, or puff topography, of the waterpipe user during a single, 45-minute use episode produces 100 times the smoke as a single, 5-minute cigarette smoking episode (with about 8.4 times the CO, 1.7 times the nicotine, and 36.0 times the “tar”). Not surprisingly, data from the clinical laboratory demonstrate that waterpipe users are exposed to nicotine and CO, experience cardiovascular and pulmonary effects, and display symptoms of nicotine dependence. Dr. Eissenberg will review recently collected data regarding waterpipe use prevalence, perceptions, toxicant exposure, and physiological effects, and discuss these data in terms of research needs and policy implications.

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SYM6C  UNDER OUR RADAR: INCREASES IN CIGAR CONSUMPTION IN THE UNITED STATES

Cristine Delnevo, Ph.D., M.P.H.*, UMDNJ-School of Public Health

Some suggest that the cigar boom, specifically the dramatic increase in prevalence, may be over. However, USDA data has demonstrated steady increases in U.S. cigar consumption. This paper carefully reviews cigar consumption in the U.S. and considers factors and trends influencing the rise in consumption. Furthermore, reasons for why the problem remains under our radar are discussed. Data from several sources are utilized including, but not limited to, the National Survey on Drug Use and Health, the National Health Interview Survey, the U.S. Department of Agriculture, the Tobacco Tax Bureau, ACNielsen, and internal tobacco industry documents. Collectively, these data facilitate a greater understanding of the recent rises in cigar consumption. First, little cigars sales have considerably increased and present day consumption rivals that of 1973 when a legal loophole allowed television advertising of little cigars during the cigarette broadcast ban. Like 40 years ago, this current boom can be attributed to marketing that exploits the little cigars similarity to cigarettes and capitalizes on tax and other regulatory disparities. Not surprisingly, some cigarette smokers report the use of little cigar brands as their “usual” brand. Second, there is an increasing use of flavors in cigars, reflecting a parallel trend in the cigarette industry. Flavored cigars currently account for approximately 40% of cigar sales in convenience stores in 2006. Third, research suggests that some cigar users only know their product by its brand name and may not consider the product a cigar or tobacco. And some of this use may come in the form of blunts (i.e., cigars filled with marijuana). Indeed, the use of blunts, as a marijuana delivery device, is also on the rise. The previous issues raise questions about how tobacco users perceive their products. Subsequently, surveillance data that regularly and accurately monitor cigar use are sparse. Given steady growth in cigar consumption, innovative cigar marketing, and the expansion of available cigar products, the threat posed by cigars deserves renewed attention.

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SYM6D  CONSUMER REACTIONS TO NEW SMOKELESS TOBACCO PRODUCTS: A THREAT TO QUITTING?

Katherine E. Kemper*, GlaxoSmithKline

Tobacco companies are adapting to the changing environment by offering a growing array of smokeless tobacco products. The explicit and implicit claims made for these products have an impact on smokers’ willingness to try the products, as well as their intent to quit using tobacco altogether. The role of therapeutic nicotine products for helping smokers quit merits re-examination in light of the expanding range of alternative tobacco products. Recent consumer research, including qualitative research involving 48 smokers and quantitative research involving 501 smokers, on smokers’ reactions to new smokeless tobacco products will be presented, and implications discussed. Additional empirical questions for further research will also be proposed.

No funding (but Ms. Kemper is an employee of GSK).

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SYM6E  HAS OUR SCIENTIFIC AND POLICY FOCUS ON THE HARMs ASSOCIATED WITH CIGARETTE USE COME AT THE EXPENSE OF SIMILAR, NECESSARY WORK ON NON-CIGARETTE TOBACCO PRODUCTS?

Matthew Barry, M.P.A.*, Campaign for Tobacco Free Kids

This presentation will focus on the broad scientific, research and policy questions related to non-cigarette tobacco products. The vast majority of harm associated with tobacco use stems from cigarette use and most of the underlying scientific research on tobacco is related to cigarettes. As a result, the policy and treatment responses to “tobacco” have been largely geared toward cigarette use. But there is increasing evidence that this focus on cigarettes, which do account for the largest portion of morbidity and mortality associated with tobacco use, may be resulting in increases in the use of non-cigarette tobacco products around the globe. There are also cultural differences around tobacco use that have resulted in the use of non-cigarette tobacco products being very prevalent in certain countries (e.g., smokeless tobacco in India, waterpipes in many countries of the eastern Mediterranean region). Further, consumer perceptions of these non-cigarette products are such that many users and non-users view them as much less harmful and/or addictive than cigarettes. When these perceptions of less harm are combined with policies that can result in these products being more accessible (minimal advertising restrictions), less expensive (lower tax), and more appealing to consumers (flavors), there are risks of increases in prevalence and shifts in attitudes about quitting.

No funding.

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SYM7 USING SOCIAL MARKETING TO INFLUENCE TOBACCO USE BEHAVIOR: THE EXPERIENCE OF THE AMERICAN LEGACY FOUNDATION

Cheryl G. Heaton, Dr.P.H.*, Donna Vallone, Ph.D., Joseph Martyak, J.D., Amber Thornton, M.P.H., C.H.E.S., Jane A. Allen, M.A., Ellen Vargas, J.D., Jennifer Duke, Ph.D., American Legacy Foundation, Ellen R. Gritz, Ph.D., M. D. Anderson Cancer Center (discussant)

The American Legacy Foundation uses social marketing to prevent youth smoking, increase adult cessation and encourage families to adopt home smoking bans. This symposium will highlight five Legacy campaigns and three campaigns that were funded through Legacy’s grants program. Each of these examples illustrates how Legacy uses social marketing to achieve its public health goals. This symposium should be of interest to anyone who is interested in using social marketing — whether at the national or local level — to influence smoking or tobacco use behavior. The symposium will conclude by describing how Lorillard Tobacco Company attempted to shut down Legacy based on the claim that the edgy truth campaign “vilified” and “personally attacked” the corporation. The tobacco control community will be interested in learning what can happen when an effective social marketing campaign draws the attention of the tobacco industry.

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SYM7A REDUCING YOUTH SMOKING THROUGH COUNTERMARKETING: THE TRUTH CAMPAIGN AS A MODEL PREVENTION PROGRAM

Donna Vallone, Ph.D.*, Cheryl G. Heaton, Dr.P.H., Jane A. Allen, M.A., Joseph Martyak, J.D., Jennifer Duke, Ph.D., American Legacy Foundation

The truth campaign is a national, anti-tobacco campaign designed to prevent smoking initiation among at-risk youth. This edgy campaign has won awards for effectiveness in advertising, and results have been published on two occasions (in 2002 and 2005) in the American Journal of Public Health. Within one year of its launch, the truth campaign reached most youth in the U.S., changed targeted beliefs and attitudes about smoking, and was associated with reduced intention to smoke. Later analysis showed that the campaign was responsible for 22% of the decline in youth smoking from 1999 to 2002. In 2002, there were approximately 300,000 fewer youth smokers as a result of truth. What has made the truth campaign so successful? This presentation focuses on the elements of the truth campaign that are known to have contributed to its success, including the philosophy behind the campaign, the development and marketing of truth as a brand, the decision to target sensation seeking youth and the bold advertising strategy and execution. An example of the truth advertisements will be shown. The presentation will conclude with a discussion about the design of the truth evaluation and a look at recent campaign results. Enough is known about the effectiveness of the truth campaign — and the components of the campaign that have contributed to its success — that it should serve as a model for other anti-tobacco social marketing efforts.

This research was funded by American Legacy Foundation.

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SYM7B INCREASING ADULT SMOKING CESSION THROUGH INNOVATIVE SOCIAL MARKETING CAMPAIGNS

Joseph Martyak, J.D.*, Cheryl G. Heaton, Dr.P.H., Donna Vallone, Ph.D., Jane A. Allen, M.A., Jennifer Duke, Ph.D., American Legacy Foundation

In 2004 and 2005 Legacy launched two innovative smoking cessation campaigns called “Bob Quits” and “Mary Quits” in New York City and Washington, DC respectively. These social marketing campaigns made use of a “reality TV” format and daily blogs to follow real individuals as they tried to quit smoking. The campaign taught smokers proven cessation strategies and encouraged them to plan for their next quit attempt. “EX” is a new, comprehensive cessation campaign that is being piloted by Legacy in four U.S. cities. The campaign includes television advertisements, a quit book developed specifically for the campaign, access to telephone and Internet counseling and for some individuals, pharmacotherapy. EX will be positioned as a brand, a social marketing strategy that was extremely effective when used in the context of the truth campaign. EX adheres to the body of scientific evidence about effective cessation but uses a new “voice” — that of a former smoker — to present information to its audience. The campaign acknowledges how difficult it is to quit and emphasizes that it may take many quit attempts in order to succeed. This presentation focuses on the philosophy behind Legacy’s social marketing cessation campaigns and what is known about their effectiveness to date. The design of the EX pilot will be described, including a look at the partnerships Legacy has developed to increase the likelihood of campaign success. Advertisements from both the Bob and Mary Quits campaigns and the EX campaign will be shown. The presentation will conclude with a look at preliminary evaluation data from two of the four EX pilot sites.

This research was funded by American Legacy Foundation.

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SYM7C USING SOCIAL MARKETING TO INCREASE THE PREVALENCE OF VOLUNTARY SMOKING BANS IN THE HOME AND CAR

Cheryl G. Heaton, Dr.P.H.*, Donna Vallone, Ph.D., Joseph Martyak, J.D., Jane A. Allen, M.A., American Legacy Foundation

Evidence from two nationally representative Legacy surveys show that, in 2003, 13% of all young people age 12-17 were exposed to secondhand smoke (SHS) in their homes daily, and that 7% were exposed to SHS daily in a car. Although SHS exposure has declined in recent years, about four million youth are still exposed to SHS at home. Home smoking bans can do much to protect young people from the health effects of SHS exposure, but are in place in fewer than half of all homes in which a smoker lives. In response to these findings, Legacy launched a campaign called “Don’t Pass Gas” in partnership with the Ad Council. The campaign uses humor to educate the public about the dangers of secondhand smoke and to encourage them to implement smoking bans in their homes and cars. This presentation focuses on the philosophy behind the campaign and the message strategy, and presents campaign evaluation data. Examples of the advertisements will be shown.

This research was funded by American Legacy Foundation.

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SYM7E

OPPOSITION TO EFFECTIVE SOCIAL MARKETING: LORILLARD TOBACCO COMPANY’S ATTEMPT TO SHUT DOWN AMERICAN LEGACY FOUNDATION

Ellen Vargyas, J.D.*, Cheryl G. Healt, Dr.P.H., Donna Vallone, Ph.D., Joseph Martyak, J.D., Jane A. Allen, M.A.

Recent evidence, including evidence from the truth campaign, suggests that hard-hitting anti-tobacco messages are extremely effective in turning youth away from smoking. However, social marketing campaigns that reduce tobacco use can expect to draw ire of the tobacco industry, and this can result in years of expensive, time-consuming litigation. This talk focuses on how Lorillard Tobacco Company attempted to shut down the American Legacy Foundation based on the claim that the truth campaign “vilified” and “personally attacked” them, in violation of the Master Settlement Agreement. The tobacco control community will be interested in learning about the litigation and its resolution including how Legacy managed the many costs and pressures it imposed, while at the same time continuing to pursue lower smoking rates through the truth campaign.

This research was funded by American Legacy Foundation.

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SYM8A

INTERGRATING A BRIEF ALCOHOL INTERVENTION INTO SMOKING CESSATION TREATMENT FOR HEAVY DRINKERS: A RANDOMIZED CLINICAL TRIAL

Christopher Kahler, Ph.D.*, Heather LaChance, Ph.D., Peter Monti, Ph.D., Brown University; David Abrams, Ph.D., National Institutes of Health; Susan Ramsey, Ph.D., Richard Brown, Ph.D., Brown Medical School

Heavy alcohol use frequently co-occurs with smoking and is associated with reduced odds of successful smoking cessation. However, no protocols have been established for addressing heavy alcohol use during smoking cessation treatment. This randomized clinical trial compared standard smoking cessation treatment (ST) to a cessation treatment that integrates a brief alcohol intervention (ST-BI). Both conditions involved 4 individual counseling sessions and 8 weeks of nicotine patch, starting at 21 mg. Participants were 176 smokers who drank heavily according to NIAAA guidelines but were not alcohol dependent. Analyses of point prevalence abstinence at 2, 8, 16, and 26 weeks after quit date, using generalized estimating equations (GEE), indicated a modest advantage of ST-BI over ST (B=.42, SE=.25, odds ratio [OR]=1.52, p=.10) that did not reach statistical significance. However, treatment condition significantly interacted with baseline drinking levels (B=.42, SE=.25, OR=2.9, p=.03) such that the effect of ST-BI was stronger at lower levels of drinking. When the effect of ST-BI was tested after eliminating those 28 subjects who were drinking very heavily (3 or more drinks per day for women and 4 or more drinks per day for men), the main effect of ST-BI on the odds of abstinence was significant (B=.70, SE=.27, OR=2.01, p=.01). Those in ST-BI tended to drink fewer drinks per day during treatment than those in ST, but this effect was small and did not reach significance. The perceived importance of changing drinking significantly more during treatment in ST-BI compared to ST. Likewise, at posttreatment, 58.4% of those in ST-BI reported avoiding drinking alcohol as much as possible, compared to 35.4% of those in ST, p=.004. In ST-BI, 12.7% avoided drinking for the full 8 weeks while on the nicotine patch compared to 3.9% in ST, p=.004. Results suggest that ST-BI is a promising approach for the substantial subpopulation of smokers who drink heavily and that a more intensive alcohol-focused intervention may be needed to achieve greater changes in drinking and to help the heaviest drinkers successfully quit smoking.

Supported by NIDA grant DA015534 to Dr. Kahler.

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SYM8B  IMMEDIATE ANTECEDENTS AND CONSEQUENCES TO CIGARETTE SMOKING IN POSTTRAUMATIC STRESS DISORDER

Jean C. Beckham*, Matt T. Wiley, Susannah Miller, Michelle F. Dennis, and Patrick S. Calhoun. Durham Veterans Affairs Medical Center, Department of Psychiatry and Behavioral Sciences, Duke University Medical Center, VSN 6 Mental Illness Research, Education and Clinical Center

In order to evaluate antecedents and consequences of ad lib smoking, smokers (16 PTSD and 13 non-PTSD) monitored ad lib smoking with electronic diaries for 1 week, and binary GEE models were used to evaluate possible differences. Compliance within two minutes of prompts was recorded, and averaged 80% with no difference across groups. As expected, compared to non-PTSD smokers, PTSD smokers reported higher negative affect, more total PTSD symptoms, and higher craving ratings. Age, minority status, nicotine dependence, and lifetime major depressive disorder were significantly related to smoking occasions and were controlled for in each of the models. As expected, craving was significantly increased for all smokers pre-cigarette compared to baseline. For PTSD smokers, total PTSD symptom severity as well as cluster C [avoidance and numbing symptoms; and D symptoms [hypersurround]] were significant antecedents for smoking. Several group x time interactions were significant and reached a level of restlessness. There was a significant reduction in craving for all smokers post-cigarette, but there was a significantly greater reduction in PTSD smokers compared to non-PTSD smokers. Anxiety was also significantly reduced for all smokers post-abstinence, while there was a significant increase in restlessness after smoking. PTSD smokers reported a significant decrease in their PTSD symptom severity after smoking. In summary, these results suggest: (1) PTSD smokers experience higher levels of craving, negative affect and anxiety (as well as PTSD symptoms) on a daily basis; (2) PTSD smokers are more likely to smoke when experiencing these negative symptoms; and (3) PTSD smokers report greater relief from these symptoms following smoking. Taken together, the results suggest that while all smokers use smoking as a mood management tool, PTSD smokers rely more heavily on smoking to manage their negative mood and PTSD symptoms.

This research was supported by 2R01CA081595, Veterans Affairs Merit Award MH-0018, R21 DA019704-01, and K24 DA016388.

SYM8C  SUSTAINED-RELEASE BUPROPION COMBINED WITH TRANSDERMAL NICOTINE PATCH FOR SMOKING CESSATION IN SCHIZOPHRENIA

Tony P. George*, Jennifer C. Vesciacho, Andrea H. Weinberger, Kristi A. Sacco, Department of Psychiatry, Yale University School of Medicine, New Haven, Connecticut

Schizophrenics smoke at a much higher rate (~88%) than the general population (~22%) and have difficulty with smoking cessation. Previous studies have found that sustained-release (SR) bupropion and transdermal nicotine patch (TNP) are safe for smokers with schizophrenia and do not exacerbate psychiatric symptoms. However, short-term quit rates have been less than 20%. Accordingly, we determined whether the combination of bupropion SR and TNP is safe for smoking cessation in treatment-seeking nicotine dependent smokers with schizophrenia or schizoaffective disorder. Fifty-four clinically stable outpatients with schizophrenia participated in this 10-week randomized, double-blind, placebo-controlled clinical trial. Participants received bupropion (300 mg; n=27) or placebo (n=27) and open-label TNP (21 mg), and weekly group smoking cessation therapy. Main outcomes measures were self-reported continuous smoking abstinence in the last four weeks of the trial (Days 43-70) and 7-day point prevalence abstinence at 6 month post-TQD. Treatment retention and medication compliance were high (~70%) with no significant group differences. Participants who received bupropion SR + TNP were significantly more likely than those who received placebo SR + TNP to report continuous smoking abstinence for the last four weeks of the trial (p<0.05) and at 6-month follow-up assessment (p<0.05). Positive and negative symptoms of schizophrenia were not altered by these treatments or abstinence. These findings suggest that the combination of bupropion SR and TNP was safe and effective for both short-term and long-term smoking abstinence in nicotine-dependent smokers with schizophrenia.

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SYM8D  EFFICACY OF SEQUENTIAL VS. CONCURRENT USE OF FLUOXETINE IN SMOKING CESSATION FOR ELEVATED DEPRESSIVE SYMPTOM SMOKERS

Richard A. Brown, Ph.D.*, David R. Strong, Ph.D., Ivan W. Miller, Ph.D., Christopher W. Kahler, Ph.D., Raymond Niaura, Ph.D., and Lawrence H. Price, M.D., Brown Medical School

Fluoxetine, a selective serotonin reuptake inhibitor (SSRI), has shown promise in the treatment of smokers with elevated depressive symptoms. This randomized, open label clinical trial examines three logical, real-world alternatives for providing smoking cessation treatment to smokers with elevated depressive symptoms, but not meeting diagnostic criteria for major depressive disorder (MDD). In a sample of 216 smokers (mean CES-D = 11.22), participants were randomly assigned them to either: (1) brief standard smoking cessation treatment with transdermal nicotine patch (ST-TNP), (2) concurrent antidepressant pharmacotherapy with fluoxetine (20 mg.) + ST-TNP, or (3) sequential antidepressant pharmacotherapy with fluoxetine (20 mg.) + ST-TNP wherein fluoxetine was started 8 weeks prior to and extended throughout ST-TNP. With the majority (n=175) of 12-month follow-ups completed biochemically verified, findings indicate that sequential fluoxetine treatment resulted in significantly higher point prevalence abstinence at 12-month follow-up than concurrent fluoxetine treatment (41.5% vs. 22.4%, p<0.003). Furthermore, sequential fluoxetine treatment resulted in lower levels of nicotine withdrawal-related negative affect immediately after quitting and these reductions in negative affect served to mediate the relationship between sequential fluoxetine treatments and improved smoking cessation outcomes. Findings suggest the benefits of treating elevated depressive symptom smokers using fluoxetine smoking cessation treatment. Theoretical and clinical implications of these findings are discussed.

Supported in part by grant PBP-104347 from the American Cancer Society to Dr. Richard A. Brown.

SYM9  HUMAN ALLELIC VARIATION THAT CONTRIBUTES TO NICOTINE DEPENDENCE AND SUCCESS IN SMOKING CESSATION

G. Swan, SRI International; C. Lerman, University of Pennsylvania; L. Beint, Washington University, St. Louis; G. Uhl, NIH; JeD Rose: Discussant

Classical genetic studies now unequivocally indicate that about half of human individual differences in vulnerability to nicotine dependence come from genetics. These influences on vulnerability to nicotine dependence overlap substantially with genetic influences on vulnerability to other substances. Interestingly, replicated studies also find that about half of the ability to quit smoking is also genetic. Linkage, association genome scanning (“whole genome association”) and candidate gene studies now provide a substantial body of information about the molecular genetic influences on addiction vulnerability. The molecular genetic vulnerability for nicotine dependence appears to be polygenic; no single gene provides a large influence. The molecular genetic vulnerability for nicotine dependence overlaps with vulnerabilities to other addictive substances, as indicated by the classical genetic studies. The molecular genetic bases of successful nicotine cessation appear to overlap partially, but not completely, with the genetic bases of vulnerability to nicotine dependence. Gene variants that contribute to individual differences in vulnerability to nicotine dependence and ability to successfully stop smoking identify a number of genes that might not have been anticipated, including those that encode molecules related to “cell adhesion” processes, enzymes and transcription factors as well as receptors and transporters. Taken together, these findings provide novel insights into the molecular bases of nicotine dependence and the ability to successfully quit smoking. Information about the allelic variants that contribute to success in smoking cessation provide information that we can use to model effects of stratification by genotypes on the cost and power of clinical trials for smoking cessation. As trial costs increase and genotyping costs decline, even markers that detect 1/2 of the total genetic contributions to smoking cessation success can make a large impact in reducing trial costs and enhancing trial power.

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Emerging clinical trial evidence suggests that therapeutic response to nicotine replacement therapy (NRT) is influenced, in part, by functional genetic variation in nicotine metabolizing enzymes (CYP2A6), genes coding for opioid and dopamine receptors (e.g., OPRM1, DRD2), and dopamine and steroid metabolizing enzymes (e.g., COMT). To explore the bio-behavioral mechanisms underlying these effects, we examined genetic associations with the relative reinforcing value of nicotine in a human behavioral pharmacology study using within-subject double-blind crossover design. To investigate nicotine-opioid interactions, 60 smokers were selected by OPRM1 A118G genotype (A/A, normal activity, n=30; A/G or G/G, low activity variant, n=30). Following 4 days of pre-treatment with the opioid antagonist naltrexone or placebo, participants completed a validated cigarette choice paradigm to assess the relative reinforcing value of nicotine. There was a statistically significant OPRM1 by gender interaction; among females, the low-activity G allele (A/G and G/G) was associated with reduced rewarded responding and nicotine self-administration. Among males there was no genotype effect. The COMT Val108Met genotype by gender interaction was also significant; among females, the low-activity Met/Met genotype was associated with reduced nicotine reinforcement. The main and interacting effects of medication phase on nicotine choices were not significant. These data provide the first evidence for an association between a functional OPRM1 A118G variant and nicotine reward, an endophenotypic measure of nicotine dependence and suggest sex heterogeneity in these effects.

**SYM9A**

**GENETIC INFLUENCES ON NICOTINE REWARD**

C. Lerman, R. Ray, C. Jepson, F. Patterson, A. Strasser, M. Rukstalis, W. Berrettini, University of Pennsylvania; K. Perkins, University of Pittsburgh; S. O’Malley, Yale University; R. Tyndale, University of Toronto; N. Benowitz, University of California-San Francisco

**SYM9B**

**LINKAGE ANALYSES OF NICOTINE DEPENDENCE AND METABOLISM: DIFFERENT GENOMIC REGIONS OF INTEREST?**

Gary E. Swan, Kirk Willmsen, Neal Benowitz, Christina N. Lessov-Schlaggar, Heidi Feiler, Hyman Hops, Judy Andrews, Elizabeth Tildesley; SRI International; University of North Carolina, Chapel Hill; University of California, San Francisco; Oregon Research Institute

We use subsets of SOFAM families to search for genomic loci for: (1) nicotine dependence; and (2) nicotine metabolism. The first analysis used phenotype data from 867 individuals from 389 families and genotype data from 613 of these individuals from 158 families with three or more smokers among first-degree relatives. Proband ages were 28.7 (±6) years of age. 763 dinucleotide repeat microsatellite markers distributed across the 22 autosomes (average inter-marker distance <5 cM) were genotyped with a multistage data checking approach to minimize errors in pedigree structure, sample identity, and genotypes. Multipoint LOD scores were determined using QTL statistics. Among the phenotypes with significant linkage peaks was the Fagerstrom Test for Nicotine Dependence score (chromosome 6, 178 cM, LOD score=2.73). The second study of 224 individuals from 55 of these families began with oral administration of ammonium chloride, administration of 2 mg of deuterium-labeled nicotine and 10mg of labeled or unlabeled cotinine (depending on smoking status). Saliva samples were collected at 6, 12, 24, 36, 48, and 60 hours. Cotinine concentration in saliva was determined by gas chromatography-mass spectrometry and cotinine clearance was computed as dose/area under the saliva concentration time curve. The 3'-hydroxycotinine/cotinine ratio in saliva at 8 hours, a marker of the rate of metabolism, was also computed. Genotypes at the same 763 markers described above allowed linkage to metabolic phenotypes including the 3'-hydroxycotinine/cotinine ratio (chromosome 1, 206 cM, LOD score=2.88) and the area under the cotinine concentration curve (chromosome 15, 6 cM, LOD score=2.72). Genes known or suggested to have functional significance of relevance to nicotine dependence and metabolism within the regions containing the linkage peaks will be reviewed. Similarities and differences in genomic regions identified by the two analyses along with convergence with findings from previously published linkage and association analyses of nicotine dependence and/or metabolism will be discussed.

**SYM9C**

**GENETIC VARIANTS FOR NICOTINE DEPENDENCE AND SUCCESSFUL ABSTINENCE: CONVERGENCE WITH GENETICS OF OTHER ADDICTIONS AND POTENTIAL IMPACT ON CLINICAL TRIALS FOR SMOKING CESSATION**

George R. Uhl, Cathy Johnson, Tomas Drigo, Qing Rong Liu, Caryn Lerman, Jed Rose

Classical genetic studies support ca 0.5 heritabilities for nicotine dependence and for success at abstaining from smoking. Whole genome association studies of nicotine dependent individuals who were successful in abstaining from cigarette smoking, nicotine dependent individuals who were not successful in abstaining and ethnically matched control subjects free from substantial lifetime use of any addictive substance identify 1) Genes that contain SNPs with allele frequencies that differ between nicotine-dependent vs. control individuals that overlap substantially with genes that contain markers whose allelic frequencies distinguish four other substance dependence vs. control groups (p < 0.018). SNPs whose allele frequencies distinguish successful vs. unsuccessful abstainers cluster in small genomic regions in ways that are highly unlikely to be due to chance (p < 0.00001) and nominate, as candidates to contribute to genetic components of successful abstinence from smoking, genes that are implicated in inter-related functions including cell attachment and adhesion processes that help to establish and maintain neuronal connections of special relevance to addiction’s memory-like features, enzymes, transcriptional regulators, neurotransmitters and receptors, and genes involved in DNA, RNA and protein processes. We have used this data to develop a model for the effects of genotypic stratification in smoking cessation trials that identifies relationships between the costs of identifying and genotyping prospective trial participants vs. the costs of performing the clinical trials and the increasing savings that result from genetically stratified designs as recruiting/genotyping costs go down and trial costs increase. This model helps to define the circumstances in which genetically stratified designs enhance power and reduce costs for smoking cessation clinical trials.

**SYM9D**

**GENOME WIDE ASSOCIATION AND CANDIDATE GENE STUDY OF NICOTINE DEPENDENCE**

Laura Jean Bierut and the NicSNP Consortium

To identify genes that contribute to the development of nicotine dependence, we performed a comprehensive high-density genome wide association and candidate gene study using nicotine dependent smokers as cases and non-dependent smokers as controls. The Fagerstrom test for nicotine dependence (FTND) was used to assess dependence, where cases were required to have an FTND of 4 or more. The control criterion was strict: control subjects must have smoked at least 100 cigarettes in their lifetimes and had an FTND of 0 during the heaviest period of smoking. The genome wide association study was carried out using a two-stage design. In the first stage, genotyping of over 2.4 million single nucleotide polymorphisms (SNPs) was completed in case and control pools. In the second stage, SNPs for individual genotyping were selected based on the most significant allele frequency differences between cases and controls pooled results. Individual genotyping of 31,960 selected SNPs was completed in 1050 nicotine dependent cases (FTND > 4) and 879 smoking controls. For the candidate gene study we targeted over three hundred candidate genes and analyzed 3,713 SNPs. The primary analysis, a logistic regression model with covariates of age, gender, genotype and gender by genotype interaction, identified 35 SNPs in the genome wide association study with p-values less than 10-4 (minimum p-value 1.53 X 10-6) and additional analyses support true findings in this group. Several novel genes in addition to candidate genes are also strongly associated with nicotine dependence. This work anticipates the future directions of large-scale genome wide association and candidate gene studies with state-of-the-art methodological approaches and sharing of data with the scientific community.

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SYM10A GENDER DIFFERENCES IN TOBACCO DEPENDENCE SCORES AND WITHDRAWAL USING ECOLOGICAL MOMENTARY ASSESSMENT DATA

Megan E. Piper, Ph.D.*; Stevens S. Smith, Ph.D., Michael C. Fiore, M.D., M.P.H., and Timothy B. Baker, Ph.D., University of Wisconsin

A number of studies have examined gender differences in tobacco dependence and its treatment. Using data from 2 randomized placebo-controlled smoking cessation trials (N = 970), gender differences were examined for a number of tobacco dependence measures. All participants completed a baseline questionnaire assessing smoking patterns and demographic data, as well as the Wisconsin Inventory of Smoking Dependence Motives (WISDM-68), the Nicotine Dependence Symptom Scale (NDSS) and the Tobacco Dependence Screener (TDS). In one study (N = 608, participants also provided ecological momentary assessment (EMA) data on their withdrawal symptoms and affect for one week pre-quit and one week post-quit. Analyses from this study revealed that women scored significantly higher on the following scales (WISDM-68 Affiliative Attachment, WISDM-68 Cue Exposure/Associative Processes, WISDM-68 Negative Reinforcement, WISDM-68 Weight Control, WISDM-68 Total, TDS Total, NDSS Drive, NDSS Priorities); whereas men scored significantly higher on the FTND, NDSS Continuity and number of cigarettes smoked per day. Using the EMA data collected one week prequit and one week postquit, we examined growth patterns for withdrawal-related variables (e.g., total withdrawal, negative affect, craving) with maximum likelihood estimation. Analyses of withdrawal patterns revealed that on the quitday, women had significantly larger increases in total withdrawal than men (t(603) = 2.34, p = 0.02) and a trend toward significantly larger increases in negative affect (t (603) = 1.76, p = 0.08) as well as a significantly larger decrease in positive affect (t (603) = 1.37, p = 0.02) than men. Women also had significantly lower pre-quit rates of craving than did men (t (491.39) = 2.78, p = 0.01). These results suggest that women and men have different manifestations of dependence as indexed by both paper and pencil assessment of motivations and in vivo assessment of withdrawal experiences.

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SYM10B SMOKING RELAPSE IN WOMEN: EFFECT OF MENSTRUAL PHASE

Sharon Allen, M.D., Ph.D.*, Tracy Bade, M.P.H., Dorothy Hatsukami, Ph.D., University of Minnesota

Studies show that women are more likely to relapse to smoking faster and more completely than men. Behavioral and physiological reasons might account for this gender difference. A growing body of literature, although conflicting, is emerging on effects of ovarian hormones through modulation of the menstrual cycle on nicotine addiction. The present study examines if women, who quit in follicular phase, have higher levels of brain nicotinic receptors and that these levels are not regulated by fluctuations of ovarian hormones. Dr. Hatsukami will discuss how these findings, derived from studies that span molecular to clinical research, advance our understanding of how sex differences influence nicotine dependence and smoking cessation.

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SYM10C SEX DIFFERENCES AND PROGESTERONE EFFECTS ON SUBJECTIVE AND PHYSIOLOGICAL RESPONSES TO INTRAVENOUS NICOTINE

Mehmet Sofuoglu, M.D., Ph.D.*, Sonah Yoo, R.Ph., and James Poling, Ph.D., Yale University, School of Medicine and VA Connecticut Healthcare System

Sex differences in acute nicotine effects have not been systematically examined in humans. Similarly, the effects of individual sex hormones on nicotine responses are not well-characterized in humans. The goals of this study were (1) to determine the effects of a female sex hormone, progesterone, on acute physiological and subjective responses to intravenous (IV) nicotine in men and women and (2) to determine sex differences in response to IV nicotine responses in male and female smokers. Six male and six female smokers participated in a double-blind, placebo-controlled, crossover study, which consisted of 2 experimental sessions. Women were in the early-follicular phase of their cycle during study participation. Before each session, participants were treated orally with either a single 200 mg progesterone or placebo. Starting two hours following the medication treatment, participants received an IV saline injection, followed by 0.5 and 1.0 mg/70 kg IV nicotine. Progesterone treatment, compared to placebo, enhanced the ratings of bad effects from IV nicotine and attenuated the ratings of drug liking in men and women. Women had greater heart rate and systolic blood pressure responses to IV nicotine than male smokers. Similarly, the rating of all 5 subjective items: drug strength, good effects, bad effects, head rush, and drug liking were greater in women than men. These results suggest that progesterone may significantly alter the subjective effects of nicotine in men and women. This study also shows the greater sensitivity of women, as compared to men, for physiological and subjective responses to nicotine. Further studies are warranted to examine sex and menstrual cycle effects on nicotine responses.

The study was conducted while the first author was at Yale University. Supported by a grant from National Institute on Drug Abuse (R01-DA 14537) and by the Veterans Administration Mental Illness Research, Education and Clinical Center (MIRECC).

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SYM10D

BETA2 NICOTINIC ACETYLCHOLINE RECEPTOR AVAILABILITY IN MEN AND WOMEN AND THROUGHOUT THE MENSTRUAL CYCLE

Kelly Cosgrove, Ph.D., Frederic Bois, Ph.D., Erica Krantzler, Neill Epperson, M.D., Edward Perry, M.D., Gilles Talmagana, Ph.D., John Seibyl, M.D., Stephanie S. O'Malley, Ph.D., Carolyn Mazure, Ph.D., and Julie K. Staley, Ph.D.*, Department of Psychiatry, Yale University & VA Connecticut Healthcare System

Women demonstrate different sensitivity to the effects of nicotine and also exhibit a poorer response to nicotine replacement therapies compared to men, and also across the menstrual cycle. We hypothesized that these sex and cyclical differences are due to variations in the nicotinic acetylcholine receptor in brain. Nicotinic acetylcholine receptors containing the beta2 subunit (beta2-nAChR) are one of the initial sites of action of nicotine in brain, and also the most critical site for the reinforcing effects of nicotine. In the present study we evaluated beta2-nAChR availability using single photon emission computed tomography (SPECT) and the nicotinic agonist radiotracer [123I]-IA-58530 ([123I]-IA) (1) in men versus women nonsmokers to determine if there are sex differences and (2) in women nonsmokers during the early follicular phase, and again during the mid-luteal phase to vary across the course of the menstrual cycle, with changes in oestradiol, and progesterone. Ten men (age 27.7 ± 7.3, range 20-41 years) and 19 women (aged 26.2 ± 6.8, range 20-39 years) participated in one [123I]-IA scan and one MRI. Nine women (age 18-39 y) participated in a second [123I]-IA scan. With first day of menstrual flow anchored as day 1, scans were performed during the early follicular (days 4-7) and one subject on day 11) and mid-luteal (days 19-25) phases of the menstrual cycle. Hormone levels were obtained to confirm phase of cycle. b2-nAChR availability was on average 20% higher in women versus men nonsmokers throughout the brain. However, beta2-nAChR availability did not differ between the early follicular and mid-luteal phases of the menstrual cycle. The findings demonstrate that women have higher beta2-nAChR availability compared to men; however, this does not appear to be a function of menstrual cycle phase and suggests that sex differences in brain beta2-nAChR are not regulated by fluctuating hormones, but rather may be determined during brain maturation. Higher beta2- nAChR availability in women compared to men explains the differential sensitivity to nicotine, and may explain why it is more difficult for women to quit smoking.

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SYM11

CUE-PROVOKED CRAVING: OBSERVATIONS, MECHA-NISMS, AND CLINICAL IMPLICATIONS

Saul Shiffman, Ph.D., University of Pittsburgh, Pittsburgh, PA; Michael Sayette, Ph.D., University of Pittsburgh, Pittsburgh, PA; F. Joseph Mc Clemmon, Ph.D., Duke University Medical Center, Durham, NC; Raymond Niaura, Ph.D.*, Brown Medical School, Providence, RI

Smokers experience bursts of intense craving when they encounter cues that are associated with smoking. These episodic peaks in craving seem distinct from the general background level of craving smokers may experience during ad lib smoking or during abstinence. Such “cue reactivity” and “provoked craving” are particularly prominent when smokers quit, and research shows that these episodic cravings may be responsible for most relapse. This symposium discusses cue reactivity from multiple perspectives. Saul Shiffman reviews field data in clinical samples, showing that relapse episodes typically occur in the context of cravings provoked by exposure to stimuli such as seeing or smelling smoking, drinking alcohol or coffee, or experiencing negative affect. These data also show that, even smoking in the face of such cues, can be prevented through acute intervention. Michael Sayette reviews methods and findings using the laboratory cue-reactivity paradigm, which models these experiences under controlled laboratory conditions. Among the findings are that smokers who react more strongly to cue exposure are more likely to relapse, and that responses to cues differs depending on the perceived expectancy of smoking. Joseph Mc Clemmon reviews recent brain-imaging studies showing that exposure to smoking cues elicits distinctive patterns of brain activation, which correlate with subjectively-reported craving. The studies show that cue-induced craving leads to perturbations of brain activation distinct from those seen during general day-to-day decision making, suggesting different mechanisms for the two types of craving. Finally, Ray Niaura will discuss the implications of provoked craving for understanding smoking, smoking cessation, and relapse, touching on the role of conditioning in provoked craving and on the potential for behavioral and pharmacological interventions to target provoked craving responses.

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SYM11A

SITUATIONAL CUES RELATED TO TEMPTATION AND RELAPSE IN REAL-WORLD SETTINGS

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This paper reviews evidence on the role of situational cues and cue-elicited craving in smoking lapses and relapse, drawing on reports of smokers’ experiences during quit attempts, including studies using electronic diaries to capture data about smokers’ experiences in real time. The data show that smokers trying to quit experience repeated episodes of intense craving brought on by situational stimuli such as negative affect, smoking cues, and alcohol and coffee consumption. Importantly, smokers continue to experience such episodic cue-driven spikes in craving even after their levels of background craving have significantly subsided; this helps explain why lapses so often occur after it appears that nicotine withdrawal has passed. Craving and lapse episodes are often associated with intense negative affect, but this affective disturbance is probably not associated with classic withdrawal syndromes; prospective analyses show that the spikes in craving are associated with acute exacerbations of negative affect rather than with chronic stress. Exposure to the smell or sight of smoking reliably elicits craving, and is one of the most common triggers of smoking lapses. Finally, alcohol and coffee consumption, which are often linked with smoking during ad lib smoking, appear to be powerful triggers of craving and lapsing. Similar processes seem to operate to promote relapse even when smokers are given effective treatment: A study of lapses among smokers using high-dose nicotine patches or placebo shows that treatment lowered the level of background craving, but that lapses still occurred when these situational stimuli cause craving to spike to high levels, suggesting that toxic treatments affect background craving but not acute cue-provoked craving. Importantly, however, the data show that immediate application of acute interventions such as coping can prevent smoking, even in the face of strong provocative cues. Understanding the acute situational drivers of lapses to smoking, and the potential for effective interventions has the potential to lead to innovative developments in smoking cessation treatment.

Funded by NIDA R01 DA06804. Dr. Shiffman as a consultant to GlaxoSmithKline Consumer Healthcare, which markets nicotine replacement medications for smoking cessation, regarding matters relating to smoking. Dr. Shiffman also has a financial interest in a venture to develop a new nicotine replacement medication.

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SYM11B

LABORATORY SMOKING CUE EXPOSURE RESEARCH

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This presentation provides an overview of laboratory studies that use smoking cue exposure methods. The paper reviews current models, manipulations, and measures associated with this research. Current theories emphasize a variety of conditioning, cognitive, and social learning mechanisms to explain cue reactivity. Together they demonstrate that withdrawal alone cannot explain the cravings experienced by smokers. Researchers have used a wide range of cue exposure manipulations to evoke reactions in the laboratory. These include in vivo cue exposure, drug-related scripts, photographs of smoking cues, mood manipulations, and most recently, manipulations employing virtual reality methods. Key issues include the potency of the cues for eliciting reactivity, and the degree of control afforded the investigators. Measures used to index cue reactivity have ranged from traditional self-reported urge scales to nonverbal measures focusing on physiological, neurobiological, cognitive, temporal, and behavioral-expressive responses. One important issue for researchers is to understand the conditions under which these disparate measures reveal a consistent pattern of reactivity. The appeal of cue exposure research is that it holds promise for improving the ability to predict relapse vulnerability and to understand the mechanisms that underlie addiction. This paper concludes by considering areas for future research. This includes discussion of the importance of perceived opportunity to smoke in understanding cue reactivity, and the degree to which smokers while in a neutral state are able to appreciate the impact of smoking cues on their past and future behavior.

This research is supported by grant #R01 DA10805 from the National Institute on Drug Abuse.

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PARENT SMOKING, PARENTING, AND ADOLESCENT SMOKING: MODERATORS, MEDIATORS, AND RECIPROCAL INFLUENCES

Jonathan B. Bricker, Ph.D.*, Fred Hutchinson Cancer Research Center; Zeena Harakeh, Ph.D.*, Radboud University Nijmegen; Molly M. Kodl, Ph.D., Minneapolis Veterans’ Affairs Medical Center; Denise B. Kandel, Ph.D.*, Columbia University

The relationship between parent smoking and adolescent smoking is well established. More recent data have shown that general parenting practices (e.g., monitoring) and anti-smoking parenting (e.g., communicating with adolescents about smoking) might prevent adolescent smoking initiation and escalation. However, we do not understand how these parent factors and adolescent smoking fit together in meaningful ways. Specifically, we do not know the possible moderators, mediators, and reciprocal influences in the relationship between parent smoking, parenting, and adolescent smoking. Such knowledge can help lead to the development of theory-based family-focused interventions that might prevent adolescent smoking. This symposium will help fill this knowledge gap with presentations of three theory-based longitudinal studies utilizing parent and adolescent data from cohorts in the US and the Netherlands. Jonathan Bricker will present data showing the personality traits (for example, thrill seeking) that significantly enhanced the influence of parent smoking on adolescent smoking transitions. Zeena Harakeh will present the findings that the following antismoking parenting behaviors were each significant mediators of parent smoking: (1) perceived influence of parents on adolescent smoking; and (2) quality of parent-adolescent communication on smoking-related topics. Molly Kodl will show that both general and anti-smoking parenting prevented adolescent smoking escalation whereas the opposite was true that adolescent smoking escalation was associated with changes in parenting. Her presentation will also show that parent smoking and antismoking parenting had independent mechanisms of influence on adolescent smoking. Finally, Denise Kandel will discuss the above papers, which will include insights on their implications for theory and the development of family-based interventions for adolescent smoking prevention.

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SYM12B PROSPECTIVE RELATIONSHIP BETWEEN PARENTAL SMOKING AND ADOLESCENT SMOKING ESCALATION: MEDIATION BY PARENT ANTI-SMOKING SOCIALIZATION

Zeena Harakeh, Ph.D.*, Rutger C. M. E. Engels, Ph.D., Radboud University Nijmegen; Jonathan B. Bricker, Ph.D., Fred Hutchinson Cancer Research Center

The aim of the present study is to test parent anti-smoking socialization practices as hypothesized mediators of the prospective relationship between parents’ smoking behavior and adolescent smoking escalation. Participants were 428 Dutch two-parent families with at least two adolescent children (aged 13 to 17 years). Data on mother and father’s light and heavy smoking at baseline were collected and data on adolescents’ self-reported smoking were collected two years later with a 94% retention rate. Parents’ and adolescents’ reports on each parent’s anti-smoking socialization variables were collected at T1: rules not to smoke at home, perceived influence of parents on adolescent smoking, parent monitoring of adolescent smoking, frequency and quality of parent-adolescent communication on smoking-related topics, and constructive and negative reactions toward adolescent smoking. Results showed that mothers’ current smoking behavior predicted a 94% (OR=1.94, 95% CI =1.02-3.71) increase in the odds of adolescents’ escalating their smoking compared to non-smoking mothers. For fathers this was, respectively, 93% (OR=1.93, 95% CI=1.08-3.49). The two parent antismoking actions perceived influence of parents and the quality of communication about adolescent smoking were each significant (p<.05) mediators. Each of these two mediators explained, depending on whether the adolescent or the parent was reporting parent anti-smoking socialization, 80%, and 82% to 87%, respectively of the association between parents’ smoking and adolescent smoking. Parent rules not to smoke at home, parent monitoring of adolescent smoking, frequency of parent-adolescent communication about smoking-related issues, parent constructive reactions and negative reactions toward adolescent smoking were not significant mediators. Results provide partial support for the hypothesis that parents’ smoking influences adolescent smoking indirectly through smoking parents’ perceived and actual authority to socialize their children not to smoke. Implications for family-focused adolescent smoking prevention interventions will be discussed.

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This study examined the role of parenting in understanding adolescent smoking and the impact of adolescent smoking on parenting behavior. Participants were 321 parent-adolescent dyads who completed self-report questionnaires at baseline and 12 months. Adolescents were 8th and 10th graders (56% female, 80% non-Hispanic Caucasian) susceptible to smoking. Parents were largely female (87%) and most had some college education. General parenting (monitoring and the overall family environment) and antismoking specific parenting (messages, rules, and reactions to adolescent smoking) was measured. Patterns of adolescent smoking over time were derived from adolescent self-reports of their smoking in the previous six-months at each timepoint. Logistic regressions showed that baseline levels of adolescent-reported parent messages, reactions to adolescent smoking, monitoring, and a cohesive family environment were associated with 39% to 63% (all p<.05) reductions in the odds of adolescent-reported smoking escalation between baseline and follow-up. There was little evidence that adolescent-reported smoking escalation was associated with parenting changes. However, parents’ perception that rates of adolescent experimentation had decreased was associated with a decrease in self-reported reactions (p<.01). Although parents’ smoking history was associated with a 150% (p<.01) higher odds of adolescent escalation, parenting and parental smoking had independent mechanisms of influence. These findings suggest that ongoing patterns of parenting, operating independently of parent smoking, predict adolescent smoking escalation.

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PA1-1  SLOWER BRAIN UPTAKE OF INHALED NICOTINE IN DEPENDENT CIGARETTE SMOKERS THAN IN NON-DEPENDENT SMOKERS


Cigarette smoking is highly addictive, and it has been suggested that the rapid absorption of nicotine inhaled into the lungs provides a rapid reinforcing dose to the brain within 7-10 seconds. The limited efficacy of current nicotine replacement therapies for smoking cessation is often attributed to their slower delivery rate. However, previous research measuring arterial nicotine concentrations during cigarette smoking has indicated the lungs may serve as an initial depot of distribution, slowing entry of nicotine into the arterial circulation. Characterizing the time course of inhaled nicotine may have important implications for understanding nicotine addiction and for the design of effective nicotine replacement therapies to aid smoking cessation. The aim of this study was to characterize the time course of nicotine delivery into the brain when inhaled in cigarette smoke. Moreover, we compared a sample of highly dependent smokers to a sample of very light smokers exhibiting little or no dependence (“chippers”). Cigarette smokers were presented with a single puff of smoke from a cigarette that had ~5-10 mCi [11C]nicotine deposited in the tobacco rod. PET scanning commenced prior to inhalation and continued for 9 minutes. Results based on 23 subjects (13 dependent smokers and 10 chippers) showed that time to reach 90% of peak brain levels was significantly later for the dependent smokers, 162.1 s (SD=66.3), vs. 62.2 s (SD=14.1) for the chippers. The time to reach peak nicotine levels in the brain was also longer than the typical inter-puff interval (30-60 s) exhibited by the smokers, suggesting that brain nicotine levels continue to increase steadily over the course of smoking a cigarette, as opposed to showing individual peaks with each puff. These results imply that some nicotine delivery systems (e.g., nasal spray) could deliver nicotine as rapidly as cigarettes, and that factors other than pharmacokinetics (e.g., irritation) may be important in influencing their acceptability and efficacy. Other potential implications of the findings for theories of addiction will be discussed.

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PA1-2  EFFECT OF ALCOHOL ON REACTIVITY TO TOBACCO IN HEAVY DRINKING YOUNG ADULT NON-DAILY SMOKERS

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Alcohol and tobacco use disorders share high rates of co-morbidity (DiFranza & Guerrera, 1990). Evidence from longitudinal studies suggests that alcohol use may facilitate the development of tobacco use disorders in adolescents and young adults (Jackson et al., 2002). A large proportion of smokers consolidate their smoking patterns during young adulthood (Chassin et al., 2000), and it is possible that high rates of drinking found in this age group may facilitate the transition from experimental to daily cigarette use. The primary aim of this study was to examine how alcohol alters the subjective effects of smoking in heavy drinking young adults (age 21-25), who are non-daily smokers. Using a within-subject design, we examined whether a high dose of alcohol (0.08g/dl), compared to a taste-masked placebo and a no-beverage control condition, altered subjective reactivity (e.g., satisfaction, psychological reward, nausea/dizziness, craving relief, enjoyment of airway sensations) associated with smoking a single cigarette. Preliminary evidence (n=15) suggests that alcohol increased positive effects (e.g., satisfaction) and decreased negative effects (e.g., nausea) associated with smoking a cigarette. This initial study has implications for understanding how alcohol may facilitate the development of a tobacco use disorder and provide the basis for further investigations examining potential mechanisms for this effect.

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PA1-3  CREB1 SNPS AND HAPLOTYPES MODERATE RESPONSE TO NALTREXONE

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Given preclinical evidence that CREB and the mu-opioid receptor (MOR) are necessary for nicotine reward (Walters et al., 2005), we examined whether polymorphisms in the CREB1 and OPRM1 genes would affect the relative reinforcing value of nicotine. In a within-subject, double-blind study design, 60 smokers participated in two experimental sessions following 4 days of the mu-opioid receptor antagonist naltrexone vs. placebo. The primary outcome was the relative reinforcing value of nicotine, measured using a cigarette choice paradigm that evaluates choice of 0.6mg vs. 0.05mg Quest cigarettes after a brief period (2hr) of nicotine abstinence. Regression analyses revealed a significant 3-way interaction among CREB1 rs2551640, the functional OPRM1 A118G, and treatment phase (naltrexone vs. placebo) (p=0.006). In haplotype analysis, CREB1 by OPRM1 was significantly associated with difference in nicotine reward across the naltrexone vs. placebo phases (p=0.02). The CREB1 intronic SNPs studied here might provide important information about yet-undiscovered functional SNPs in CREB1, as there is high LD across our chosen markers. This study further strengthens the link between the CREB1 and OPRM1 genes and nicotine reward.

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Nicotine intake constitutes a principal mechanism for tobacco addiction. In addition to primary effects on nicotinic acetylcholine receptors, nicotine has numerous cascading effects, which may underlie different aspects of its neurobehavioral activity. Nicotine induces serotonin (5HT) release, which has not classically been thought to be involved in its action of promoting tobacco addiction. nicotine-induced dopamine release has most often been thought to be the critical link in the addictive chain by increasing reward processing in the nucleus accumbens. However, addiction may be more characterized as a disorder of compulsion than a disorder of enjoyment. 5HT mechanisms, especially in the dorsal striatum, have been found to play key roles in compulsive disorders. Perhaps nicotine-induced 5HT release may be important in liability to tobacco addiction. Clozapine, which has among many other actions has 5HT2 receptor antagonist effects decreases cigarette smoking. Ketanserin, a more selective 5HT2 antagonist, significantly attenuates nicotine effects on attention and memory. The current experiment was conducted to determine if ketanserin would reduce nicotine self-administration in rats. Male Sprague-Dawley rats (N=12) were allowed to self-administer nicotine (0.03 mg/kg/infusion, IV). After initial food pellet training and 10 sessions of nicotine self-administration training, the rats were administered ketanserin (1 or 2 mg/kg, SC) or the saline vehicle, in a repeated measures counter-balanced order. Ketanserin at both doses significantly decreased nicotine self-administration relative to performance of the same rats after saline injections. This did not appear to be due to sedative or amnestic effects of ketanserin inasmuch as the same doses did not cause changes in response on the incorrect lever in the current study or in memory or attentional performance in prior studies. It appears that serotonergic mechanisms may play critical roles in the maintenance of nicotine self-administration, and developing a better understanding of those roles may help lead to new serotonergic-based treatments to help people overcome tobacco addiction.

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PA2-1

CORRELATION OF PREPULSE INHIBITION WITH WISCONSIN CARD SORTING TEST PERFORMANCE IN SCHIZOPHRENIA AND CONTROLS: EFFECTS OF SMOKING STATUS

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Patients with schizophrenia exhibit deficits in prepulse inhibition (PPI) of the startle response, as well as high rates of cigarette smoking, and PPI has been found to be sensitive to cigarette smoking in schizophrenia. Further, this population is known to have deficits in executive functioning, as measured by neuropsychological tasks, including the Wisconsin Card Sorting Test (WCST). We examined the relationship between PPI and WCST performance outcomes in schizophrenics and controls, and the effect of smoking status. Pearson's product moment correlations were conducted between PPI and the major outcome measures of the WCST in four groups; smokers with schizophrenia (SS; n=12), nonsmokers with schizophrenia (SNS; n=7), nonpsychiatric control smokers (CS; n=13), and nonpsychiatric control nonsmokers (CNS; n=12). A significant correlation was found in the SS group between PPI 120 msec prepulse condition and the categories completed outcome of the WCST, the general measure of conceptual reasoning on this task (r=0.64, p<0.024). In contrast, no significant correlations between PPI and any WCST outcomes were observed in the CNS, SNS, or CS groups. Baseline differences amongst the four groups were observed for the PPI, F(3,28)=5.12, d=3.39, p<0.01, with SNS demonstrating the poorest PPI, and SS demonstrating significantly better PPI than both SNS (p=0.001) and CS (p=0.028). Significant differences were also found amongst the four groups in all other WCST outcomes with nonpsychiatric controls, irrespective of smoking status, outperforming schizophrenics on all outcome measures. Selected executive function outcomes of WCST (e.g. categories completed) are strongly associated with PPI in smokers with schizophrenia in comparison to non-smoking patients, and controls, suggesting that the association between sensorimotor gating and prefrontal executive functioning is enhanced by acute smoking. Our preliminary findings may contribute to understanding the vulnerability of patients with schizophrenia to nicotine dependence, as well as targeted treatment of executive functioning and PPI deficits in this population.

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PA2-2

RANDOMIZED CONTROLLED TRIAL OF A SMOKING CESSATION INTERVENTION AMONG PEOPLE WITH A PSYCHOTIC DISORDER: 3-YEAR FOLLOW-UP

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Objective: Despite extremely high smoking rates among people with a psychotic disorder, and associated financial and health costs, few studies have investigated the efficacy of smoking cessation interventions among this group. This study reports the 3-month follow-up results of a smoking cessation intervention combining nicotine replacement therapy (NRT), motivational interviewing (MI) and cognitive-behavioural therapy (CBT) for people with a psychotic disorder with routine care alone. Results at 3-, 6- and 12-months have previously been reported. Method: 298 regular smokers with a psychotic disorder residing in the community and randomized them to a routine care control condition (N=151) or an eight session, individually administered smoking cessation intervention (N=147). Outcome variables included: continuous and point prevalence abstinence rates, smoking reduction status, and changes in symptoms and functioning. Results: 164 participants were followed up at 36 months. There were no overall differences between the treatment (n=83) and control groups (n=81) in abstinence rates (point prevalence rate: 19.3% vs. 22.2%; continuous abstinence rate: 2.4% vs. 0%). Consistent with previous follow-up data, there was a dose-response relationship between treatment session attendance and smoking reduction status, with almost half of those who completed the intervention program achieving a 50% or greater reduction in daily cigarette consumption. There was no evidence of any associated deterioration in symptoms or functioning. Conclusions: These findings demonstrate the longer-term utility of an NRT plus MI/MBT smoking cessation intervention among people with a psychotic disorder. Further research into the development of more efficacious interventions is required.

This study was a joint project conducted by the Centre for Mental Health Studies (University of Newcastle and Hunter New England Mental Health) and the University of New South Wales. Funding was provided by the National Health and Medical Research Council (grant number: 141708), Rotary and CHATA (Community Health and Tobacco Action Trust). NRT was provided free of charge by the pharmaceutical companies. Help booklets were provided at a discounted price by SANE Australia.

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PA2-3

NO ADVANTAGE FOR HIGH DOSE COMPARED TO REGULAR DOSE NICOTINE PATCH ON SHORT-TERM ABSTINENCE RATES IN SCHIZOPHRENIA

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Better treatments are needed for smokers with schizophrenia who have higher baseline blood nicotine levels than control smokers and reduced cessation rates. We tested whether High-dose (42mg; HD) nicotine patch in 51 smokers with schizophrenia or schizoaffective disorder who wanted to quit smoking. We also compared serum cotinine levels at baseline to those obtained while on the nicotine patch (abstinent only) in order to determine the percent replacement of cotinine provided by the patch. Outpatient smokers with schizophrenia or schizoaffective disorder were randomized to HD or RD nicotine patch in an 8-week double-blind placebo controlled trial. Self-reported abstinence from smoking was verified with weekly-expired air carbon monoxide measure (<8 ppm). Subjects in both groups were not significantly different on background characteristics including demographics, smoking history, psychiatric symptom measures or cotinine level. Seven-day point prevalence abstinence rates at 8 weeks were not different between dose groups (32% (8/25) HD vs. 33% (8/26) RD; NSS). Survival analysis examining time to first relapse back to smoking did not differ between groups. Smokers in the RD group achieved about 102% cotinine replacement, indicative of higher than usual cotinine level. Patients in the HD group achieved about 223% cotinine replacement, indicative of higher than usual cotinine level. Seven-day point prevalence abstinence rates at 8 weeks were not different between dose groups (32% (8/25) HD vs. 33% (8/26) RD; NSS). Survival analysis examining time to first relapse back to smoking did not differ between groups. Smokers in the RD group achieved about 102% cotinine replacement, indicative of higher than usual cotinine level. Patients in the HD group achieved about 223% cotinine replacement, indicative of higher than usual cotinine level.

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PA2-4  SUSTAINED-RELEASE BUPROPION COMBINED WITH TRANSDERMAL NICOTINE PATCH FOR SMOKING CESSATION IN SCHIZOPHRENIA: RESULTS OF A DOUBLE-BLIND, RANDOMIZED, PLACEBO-CONTROLLED CLINICAL TRIAL

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Patients with schizophrenia smoke at a much higher rate (~88%) than the general population (~22%) and have a more difficult time with smoking cessation. Sustained-release bupropion (bupropion SR) and transdermal nicotine patch (NTP) are two FDA-approved treatments for smoking cessation. Previous studies have found that these treatments are safe for smokers with schizophrenia and do not exacerbate psychiatric symptoms; however, overall short-term quit rates in these studies have been less than 25% overall. The purpose of the current study was to determine whether the combination of bupropion SR and NTP is safe and superior to treatment with NTP and placebo in treatment-seeking nicotine dependent smokers with schizophrenia. Fifty-four clinically stable outpatients with schizophrenia participated in this 10-week randomized, double-blind, placebo-controlled clinical trial. Participants received bupropion (300 mg; n=27) or placebo (n=27) and open-label TNP (21 mg/24hr) and weekly group behavior smoking cessation therapy. After the initiation of bupropion SR on Day 8, the target quit date (TQD) was set at Day 15 at which time the participants received TNP. Main outcomes measures were self-reported continuous smoking abstinence in the last four weeks of the trial and 7-day point prevalence abstinence at 6 month post-TQD. Treatment retention and medication compliance was high and not significantly different between the two groups. Participants who received bupropion SR + TNP were significantly more likely than those who received placebo and TNP to achieve continuous smoking abstinence for the last four weeks of the trial (p<0.05) and at 6-month follow-up assessment (p<0.05). Positive and negative symptoms of schizophrenia were not altered by either bupropion administration or smoking abstinence. Adverse events were modest and comparable between study medication groups. These findings suggest that the combination of bupropion SR and TNP was more effective for short-term and long-term smoking abstinence in nicotine-dependent smokers with schizophrenia.

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PA2-5  COMORBIDITY OF NICOTINE DEPENDENCE AND PSYCHIATRIC DISORDERS IN A COMMUNITY ADOLESCENT SAMPLE

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Objective: To identify concurrent and predictive comorbidity between nicotine dependence and psychiatric disorders among adolescents.

Methods: The data are from two annual waves of structured household personal interviews conducted on a cohort of adolescents selected from an urban school system and their mothers. The DISC-IV-Y diagnostic interview was administered to adolescents and the DISC-IV-P interview was administered to parents about their children. In longitudinal analyses, logistic regressions were implemented to predict DSM-IV nicotine dependence.

Results: Rates of lifetime psychiatric disorders in the cohort were high: 40% met criteria for at least one DSM-IV disorder. The most prevalent disorders were disruptive (27.4%), followed by mood (16.3%) and anxiety (14.0%). Rates for depressive and anxiety disorders were higher among females than males; disruptive disorders were higher among African Americans than whites or Hispanics. There was a significant social correlates relationship between nicotine dependence and psychiatric disorders at one point in time, with the unadjusted odds slightly lower for depressive and anxiety than disruptive disorders. Dependent adolescents were more likely to meet criteria for multiple psychiatric disorders than those non-dependent. Depressive and disruptive disorders predicted dependence one year later, controlling for prior dependence. Correlatively, over the course of one year, having experienced dependence predicted only disruptive disorders, but not depressive disorders or anxiety disorders, controlling for the same disorder at the prior interview.

Conclusion: Depressive disorders appear to be stronger determinants of nicotine dependence than disruption is a predictor of depressive disorders, whereas dependence predicts an increase in disruptive disorders.

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PA2-6  EFFECTS OF SMOKING INITIATION AND PROGRESSION ON CHANGE IN DEPRESSION SYMPTOM SCORE IN MALE AND FEMALE ADOLESCENTS: EVIDENCE FROM THE ADDHEALTH STUDY

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There is considerable evidence that cigarette smoking and depression are highly comorbid, but the nature of this relationship remains unclear. We sought to explore the extent to which exposure to nicotine was associated with change in depression symptom score in male and female adolescents. Data were drawn from the National Longitudinal Study of Adolescent Health (AddHealth). Male and female adolescents were interviewed at two waves, approximately 1 year apart. Participants were selected if they reported never having smoked a cigarette at wave 1 (n=5,487), in order to isolate initially nicotine naive individuals. Participants were classified as never smokers if they also reported never having smoked a cigarette at wave 2, triers if they reported having tried a cigarette at wave 2, and progressors if they reported regular smoking at wave 2. This coding was intended to reflect increasing nicotine exposure. Depression symptom score was assessed at waves 1 and 2 using a modified CES-D. Data were analysed using a repeated-measures ANOVA with time (wave 1, wave 2) as a within-subjects factors and sex (male, female) and smoking status (never smoker, trier, progressor) as between-subjects factors. This identified a significant increase in CES-D score over time (p<0.001), which was qualified by significant time x sex (p<0.001), time x smoking status (p<0.001), and time x sex x smoking status (p<0.001) interactions. In males, higher wave 1 CES-D score was associated with an increased likelihood of subsequent smoking initiation, and among triers and progressors CES-D score increased over time compared to never smokers. In females, CES-D score at wave 1 was not associated with subsequent smoking status, but a dose-response relationship was observed between level of nicotine exposure and subsequent increase in CES-D score over time. These data suggest that nicotine exposure is associated with a subsequent increase in depression symptom score, and that this relationship may differ in males and females. The results are discussed in the context of the relationship between cigarette smoking and psychiatric morbidity, in particular depression.

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PA3-1  IMPACT OF SMOokers’ PRIoRT quITTING HISToRY ON CuRRENT CeSSATIoN ATTEMPTS

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Purpose: The number of prior quit attempts predicts success during the current quitting process. The impact of duration of the smoke free period during prior attempts has not been thoroughly investigated. We studied past failures and successes at quitting and assessed the impact on present cessation attempt. Total 2,338 smokers, n=272 report longest previous smoking abstinence <7 days [short quitters] compared to n=622 who report longest quit attempts lasting ≥1 year [long quitters].

Methods: Questionnaires on day-1 elicited self-reported information on: demographics, current medication use, obstacles to quitting, major stressors, tobacco-related habits, past quit attempts. Behavior modification and pharmacotherapy were utilized to promote smoking cessation. At 30-day mark, quit status was validated using a carbon monoxide monitor (Bedfont® hand-held). One-year f/u for quit status was done. The data were analyzed using SAS® version 9.1.

Results: There was no difference between short and long quitters in regards to gender, number of past quit attempts, past quit aids used, or reasons for quitting again. The short quitters were younger [46 yrs vs. 49 p<0.0001], had higher Fagerstrom [6.4 vs. 5.2 scores], and much higher [40 vs. 31 pack-years] smoking history. They were also more likely to report [52% vs. 40%, p<0.002] worrying how they would manage severe cravings this time. The longer quitters were more concerned [36% vs. 22%, p<0.002] about weight gain with this attempt. For this cohort: 30-day quit success (biochemically validated with exhaled C.O.)is 50% for short quitters vs. [36% vs. 22%].

Conclusions: Smokers’ past quit history revealed significant factors that may influence current cessation attempts. Awareness of roadblocks in the previous attempts [cravings for short term quitters vs. weight gain issues for long term quitters] can help clinicians to tailor behavioral modification for individuals to achieve permanent quit status. We believe the combination of pharmacotherapy along with extensive behavioral support that is targeted towards individual smokers stressors can help achieve optimum results for this addition.

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PA3-2  EFFECTS OF A BODY IMAGE MANIPULATION ON SMOKING MOTIVATION IN COLLEGE WOMEN

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Past descriptive and correlational research has shown a relationship between smoking and weight concerns among women, specifically among young adults such as college students. This study is the second in a line of experimental research testing the causal link between weight concerns and smoking motivation among college women.

This research draws upon methodology from both the substance abuse (i.e., cue-reactivity) and body image research literature. We used a 2 X 2, between-subjects factorial design to manipulate state body image (specifically, weight concerns) and smoking cues within the context of a marketing study. For the body image manipulation (BIM), participants who received the body image challenge were instructed to try on and evaluate a bathing suit. The control condition involved evaluating a neutral item (i.e., a pair). The smoking cue manipulation (SCM) exposed participants to their cigarette(s) or a neutral item (i.e., a stapler). We hypothesized that the body image challenge would increase motivation to smoke, as indexed by self-reported urge ratings and smoking topography measures. We also explored whether this effect was moderated by the presence of a smoking cue. The mean age of the 93 participants was 20. Group differences on a post-manipulation weight dissatisfaction measure indicated the BIM was successful, p<0.01. A 2X2 ANOVA with urge rating as the dependent variable supported the primary hypothesis that a body image challenge increases urge to smoke, .01, with no interaction with smoking cues was found. Thus, the study provides evidence of a situational, causal role of body image on smoking motivation. Smoking topography data will also be analyzed and presented, as well as tests of other potential mediators (e.g., negative affect) and moderators (e.g., trait body dissatisfaction).

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PA3-3  BUPROPION AND COGNITIVE BEHAVIORAL TREATMENT FOR WEIGHT CONCERNS IMPROVES SMOKING CESsATION OUTCOME AMONG WEIGHT CONCERnED WOMEN

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Although the efficacy of cognitive behavioral treatment to ameliorate women’s concerns about postcessation weight gain has been demonstrated, weight concerns remain an impediment to successful smoking cessation for many women. In a randomized, double-blind, placebo-controlled trial, weight-concerned women smokers (N=357) were randomized to an intervention designed to address weight concerns (WC) or a standard supportive group (SS), and to bupropion (B) or placebo (P), creating four groups: WC + B, WC + P, SS + B, and SS + P. We hypothesized that the addition of bupropion to WC would improve rates of sustained abstinence. Women were 42.0 ±10.1 years old, smoked 20.7 ±8.4 cigarettes per day, had smoked for 24.1 ±10.2 years, and had a BMI of 27.3 ±5.5 pretreatment. Most were white (86.1%), married (74.4%), and had some college education (85%). Group cessation treatment was provided for 3 months with booster visits over the remainder of the year. Medication was provided for 6 months. Overall, 26.1% and 17.2% of women were continuously abstinent at 6 and 12 months. Women randomized to bupropion were more likely to be continuously abstinent than those receiving placebo (p<0.02), but there were no differences in abstinence rates between WC and SS. Women in WC+B were more likely to be continuously abstinent at 6 and 12 months of study than were women in WC+P (p<0.006), whereas there were no differences in cessation rates between SS+B and SS+P. WC+B also was superior to SS+B at 8 months (p<0.005). Moreover, WC+B had a modest, short-term effect on weight gain. Continuously abstinent women in WC+B gained 4.1 ±3.3 pounds compared to 8.8 ±8.0 in WC+P, p<0.001. Although the amount of weight gained 1 year postcessation did not differ. Thus, addressing women’s weight concerns enhances smoking cessation rates and attenuates weight gain in the short-term beyond bupropion alone among weight-concerned women. It may be that WC enhances the efficacy of bupropion among women smokers concerned about postcessation weight gain.

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PA3-4  NALTROXENE AUGMENTATION OF BUPROPION TO STOP SMOKING WITH LESS WEIGHT GAIN

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Current pharmacological treatments for smoking cessation, including nicotine replacement therapies and bupropion, are modestly successful in assisting smokers to quit and in attenuating post-cessation weight gain. However, the prospect of postcessation weight gain prevents some smokers from attempting to quit. This investigation was an open label study of naltrexone hydrochloride (25 mg/day) in combination with bupropion SR (300 mg/day) for smoking cessation and minimization of post-cessation weight gain. The study sample (the naltrexone + bupropion group; n=20) was compared to a sample of matched controls who received an identical psychosocial intervention and bupropion SR treatment regimen (the bupropion only group; n=20). The primary outcomes were: (a) biochemically verified continuous abstinence (CA) from smoking over the 6-week treatment and point prevalence abstinence (PP) at end of treatment; and (b) weight gain from baseline. Adherence to the combination pharmacotherapy was slightly lower than adherence to monotherapy, although these differences were not significant. The percentage of patients reporting specific adverse events also did not differ significantly between the two groups. With regard to smoking cessation outcomes, the groups did not differ significantly on either CA (p=1.0) or PP (p=1.0). Although not statistically significant in this small sample, continuously abstinent participants in the naltrexone + bupropion group (n=6) gained less weight (M=1.67 pounds) than those in the bupropion only group (n=6, M=3.17 pounds; p=.35). A similar pattern of findings was observed in the entire sample with those in the naltrexone + bupropion group gaining less weight (n=20, M=28 pounds) than participants in the bupropion only group (n=20, M=41 pounds; p=.28). The results of this preliminary study suggest that combining naltrexone and bupropion may help minimize post-cessation weight gain, but does not result in higher smoking cessation rates compared to bupropion alone. This reduction in weight gain may be valued by weight-concerned smokers.

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PA3-5
BEHAVIORAL INTERVENTIONS TO CONTROL CESSATION-RELATED WEIGHT GAIN: WHAT DO WE KNOW? WHERE SHOULD WE GO?

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Weight gain after stopping smoking is of growing concern in the context of the obesity epidemic and the global prevalence of smokers who fear gaining weight after quitting. Newer generation cessation pharmacotherapies more successfully minimize post-cessation weight gain. However, drug treatment is contraindicated for some medical comorbidities, and many patients prefer non-pharmacologic treatment. The speaker will review current evidence on the effects during quitting smoking of behavioral interventions to promote physical activity, dietary control, and lessened weight concern. Both abstinence and weight control outcomes will be examined. A critically important consideration is that weight control intervention that is implemented during cessation treatment improve or at least not undermine tobacco abstinence. Therefore, the first question to be examined is evidence for any impact of behavioral weight control treatment on tobacco abstinence. Current practice guidelines encourage exercise and discourage dieting while quitting smoking. Thus, the second question to be considered is how well research evidence supports the policy recommendation and guides evidence-based clinical decision-making. The final question to be examined is how new research on the biobehavioral mechanisms underlying post-cessation weight gain suggests novel treatment approaches.

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PA3-6
EXPRESSIVE WRITING AS A TREATMENT ADJUNCT TO REDUCE WEIGHT GAIN IN YOUNG ADULT SMOKERS UNDERGOING SMOKE CESSATION

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This investigation evaluated the effect of expressive writing on weight gain in young adults being treated for smoking cessation. This is an extension of an earlier investigation that found an expressive writing treatment adjunct enhanced tobacco abstinence. Participants included 196 smokers aged 18-24 years (M=20 years, SD=2; 86 male, 110 female; 93% White). A randomized, two-group design was employed with 52 weeks of follow-up. Participants were randomized to brief office intervention (N=99), or expressive writing plus brief office intervention (N=97). Both conditions received 4 individual visits plus 6-weeks of nicotine patch therapy which began on the quit day following the week 2 visit. The expressive writing plus brief office intervention condition wrote for 2 consecutive days pre- and 3 consecutive days post-quit day. The brief office intervention condition completed a control writing assignment. Participants who received the expressive writing plus brief office intervention gained significantly less weight than those receiving the brief office intervention at week 3 (0.12 kg vs. 0.83 kg; p=0.033), week 4 (0.21 kg vs. 0.88 kg, p=0.036), week 8 (0.46 kg vs. 1.39 kg, p=0.024), week 16 (-0.02 kg vs. 1.87 kg, p=0.006), and week 24 (0.14 kg vs. 2.75 kg, p=0.013), but did not differ at week 52 (1.57 kg vs. 2.41 kg, p=0.507). Weight gain from baseline to end of treatment (week 8) was also significantly less in the subset of participants that were continuously abstinent throughout the treatment phase (N=20) and randomized to the expressive writing condition versus brief office only (0.04±2.12 kg vs. 2.05±2.37 kg; treatment effect=-2.35, p=0.040). The findings suggest that expressive writing holds promise as a treatment adjunct to decrease weight gain associated with smoking cessation.

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PA4-1
CONSUMER AWARENESS AND ATTITUDES RELATED TO NEW POTENTIAL REDUCE-EXPOSURE TOBACCO PRODUCT BRANDS

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In recent years, there has been a proliferation of potential reduced-exposure tobacco products (PREPs) marketed with claims that they are less harmful or less addictive compared with conventional cigarettes. Yet, these products have not been widely used among smokers and little data are available on consumers’ awareness and attitudes towards these products. Data were obtained from the 2005 Health Information National Trends Survey (HINTS), a nationally representative telephone survey of adults 18 years and older regarding health communication and associated beliefs and behaviors. Our study population included 5,586 respondents, including 1,011 current smokers and 1,596 former smokers. Forty-five percent of respondents had heard of at least one PREP product, while only 4.8% had actually tried one. Awareness and use were substantially higher among current smokers (55.6% and 12.7%). Awareness was highest for Marlboro Ultra Smooth (30.2%), Eclipse (18.2%), Quest (7.8%) and Ariva (5.4%), while less than 2% for any other product. Of respondents who had tried a PREP, 50% cited harm reduction or assistance in quitting as a reason for trying the product and 30% believed the product was less harmful than their usual brand. Fifty percent of current smokers stated that they would be “very” or “somewhat” interested in trying a cigarette advertised as less harmful, while only 4% of former smokers and 1% of never smokers were interested. Those who were interested were substantially more likely to rate their lung cancer risk as high (40.3% versus 8.3%) and to worry frequently about developing lung cancer (19.7% versus 4%). These results suggest that there is a substantial level of interest among current smokers in cigarettes marketed with claims of reduced exposure or harm. Of particular concern is that “health-conscious” smokers may be especially vulnerable to PREP marketing messages and view such products as an alternative to smoking cessation.

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PA4-2
USE OF MULTIDIMENSIONAL SHORT TERM APPROACHES TO EVALUATE A NEW REDUCED EXPOSURE PRODUCT


Demonstration of the effectiveness of short-term strategies to evaluate reduced harm claims of new PREPs is needed. Multiple product assessment strategies, including physical design, standard and intensive machine yield smoke emissions, and smoker behavior and subjective response were used to assess the new carbon filter PREP Marlboro UltraSmooth (MUS).

Method: Product design measures included ventilation and pressure drop. Smoke particulate and gas-phase constituents were measured under standard (FTC/ISO) and intense (Health Canada) smoking regimens. Human smoking topography was measured in a brand-switching study with Marlboro Lights smokers (N=36), in which participants were switched to MUS and Marlboro Ultra Lights. Salivary cotinine, physical (carbon monoxide boost, cardiac function) and subjective (smoking urge, nicotine withdrawal, mood) responses were obtained. Smokers’ perceptions of sensory characteristics and consumer acceptance were also assessed.

Results: Gas phase yields under the standard FTC/ISO regimen were substantially reduced compared with a conventional low yield cigarette, but only minor reductions were observed under the intensive regimen. Particulate phase yields were not reduced under either regimen. Human topography measures revealed puffing parameters similar to the intensive machine smoking regimen (53.1 ml puff vol, 23.1 ml puff intvl). Evidence of compensatory smoking of MUS was found, with total smoke intake (puff vol x puff no.) significantly greater for MUS than Ultra Lights and Lights (690 ± 601 & 533 ml/cig; p=0.035). Total cigarettes smoked over 2 days was similar for the three brands. Sensory ratings of taste, aftertaste, impact/kick and overall acceptability were lower than conventional brands.

Conclusion: The carbon filter technology employed in MUS has poor constituent reduction capacity when smoked under intense conditions. Topography measures suggest that the capacity of MUS to reduce exposure is limited, and overall consumer acceptance is weak. These findings support the use of short-term evaluative strategies for PREPs that can be used to develop public health strategies for counteracting “reduced harm” messages.

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FAKE PERCEPTIONS, COMPENSATORY SMOKING, AND HARM EXPOSURE RELATED TO QUEST CIGARETTES

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Quest cigarettes are manufactured with three progressively lower nicotine levels (0.6 mg, 0.3 mg, 0.05 mg) and marketed as a means to step-down to nicotine-free smoking. However, Quest cigarette tar levels do not progressively decrease, and therefore pose significant health risks. Additionally, since smokers often misinterpret the information in advertisements related to light and harm reducing cigarettes, there is a need to assess how smokers perceive their health risks to these products. Fifty smokers completed a single session laboratory visit in which each Quest cigarette nicotine level was smoked using a smoking topography device and carbon monoxide boost assessed. Results suggest that for some participants, compensatory smoking, specifically total puff volume, occurred as cigarette nicotine level decreased, resulting in significant increases in carbon monoxide boost. Digital image analysis of the Quest cigarette filters suggest that compensatory smoking behavior also lead to darkening and reddening of the filters, suggesting an increase in tar exposure. In a shopping mall intercept study, 200 current smokers viewed the Quest advertisement and responded to questions about the product. Forty percent of participants incorrectly believed that Quest cigarettes would help them quit smoking; and 40% were unsure, although the advertisement states the product is not intended to help quit smoking. Those low in Need for Cognition, high in perceived vulnerability to harm from smoking, and low in Need for Cognitiveness, high in perceived vulnerability to harm from smoking, and low in Need for Cognitiveness were more less likely to believe that Quest cigarettes help them quit smoking.

SWITCHING TO LIGHT CIGARETTES AND SMOKING CESSATION: RESULTS OF THE 2003 TOBACCO USE SPECIAL CESSATION SUPPLEMENT TO THE CURRENT POPULATION SURVEY

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Background: “Low” tar and nicotine cigarettes, referred to as “lights,” are not healthier than regular cigarettes, but smokers continue to switch to lights for various reasons. We determined the prevalence of ever (current or past) smokers who switched to lights and assessed the association between switching to lights and smoking cessation by reason for switching.

Methods: Analysis of 26,014 ever smokers from the 2003 Tobacco Use Survey who provided information on age, gender, race, nicotine dependence, current smoking status, and history of switching to lights. Ever-smokers were asked, “Have you ever switched from a stronger cigarette to a lighter cigarette for at least 6 months?” Respondents answering affirmatively were then asked about reasons for switching.

Results: There were 7,314 smokers (5,929 current everyday and 1,385 former) with complete data. Multivariable logistic regression identified determinants of smoking cessation.

Conclusions: A history of switching to lights for any reason was associated with reduced odds of current tobacco abstinence, supporting the hypothesis that switching to lights may hinder smoking cessation.

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PA5-2
SMOKING A DE-NICOTINIZED CIGARETTE BLUNTS EMOTIONAL RESPONSE TO POSITIVE MOOD INDUCTION BY PREVIOUSLY DEPRESSED SMOKERS
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Comorbid depression of smoking and depression is widely attributed to an antidepressant effect of nicotine. Yet little evidence supports this view, and nicotine’s effect on positive affect deficiency in depression is largely unstudied. We hypothesized that (1) nicotine would displace experimentally induced negative affect and enhance induced positive affect; and (2) effects would be stronger for smokers vulnerable to depression. N=168 smokers were recruited from the community: 63 (32 women) without history of major depressive disorder (MDD), 64 (35 women) with recurrent past but not current MDD, and 41 (26 women) with both current and past MDD. In four sessions, participants smoked either a nicotinized (NIC+) or de-nicotinized (NIC-) cigarette after experiencing a negative mood induction or while undergoing a positive mood induction. Repeated measures ANOVA with correction for sphericity violation modeled group (currently, previously, or never depressed) as a between-subjects factor, and condition (NIC+ vs. NIC-) and time (pre- vs. post-mood induction) as repeated measures factors. Dependent variables were PANAS positive and negative affect, Emotional response to positive mood induction showed group by time interaction for both positive [F(4,328)=2.46, p<.05] and negative [F(4,328)=3.27, p=.01] affect. Previously depressed smokers showed blunted positive affective response to a positive mood induction when smoking NIC- compared to a NIC+ cigarette [quadratic F(1,164)=4.86, p=.03]. Emotional response to negative mood induction showed no interaction with group, but rather a condition by time interaction [F(2,314)=3.88, p=.03]. Once induced into a negative mood, smoking NIC+ compared to NIC- cigarette heightened negative mood for all [F(1,157)=4.37, p<.05]. Once induced into a bad mood, self-administering nicotine uniformly worsened negative affect, contrasting an antidepressant hypothesis. However, self-administering nicotine did help previously depressed smokers respond to a positive affect induction. Nicotine may help depression-prone smokers overcome a blunted capacity to experience positive emotion. Supported by VA Medical Research.

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PA5-3
DOES SMOKING FOR POSITIVE AND NEGATIVE REINFORCEMENT MODERATE THE RELATIONSHIP BETWEEN AFFECT AND DESIRE TO SMOKE?
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Smokers differ in the degree to which they report smoking for positive reinforcement (PR) or negative reinforcement (NR) purposes. PR smoking is associated with perceived intensity and reliability of affective effects from smoking. NR smoking is associated with perceived intensity and reliability of relief from aversive states by smoking. Accordingly, high (vs. low) PR smokers should have a greater desire to smoke when experiencing low positive affect (PA), whereas high (vs. low) NR smokers should have a greater desire to smoke when experiencing high negative affect (NA). The current cross-sectional study tested these hypotheses in 116 current smokers (>10 cigs/day) who had been smoking ad libitum on the assessment day. PR and NR smoking was measured by the WISDM-68. Affect was measured by the Positive and Negative Affect Schedule. Desire to smoke was measured by the QSU-Brief and the Wisconsin Smoking Withdrawal Scale Craving Subscale (WSWS-Craving). Consistent with expectations, MANOVAs using QSU-Brief and WSWS-Craving scores as dependent variables showed that PR smoking significantly moderated the effect of PA on desire to smoke [PR?PA interaction: F(2, 111)=3.59, p=.003]. Unexpectedly, NR smoking also moderated the effect of PA on desire to smoke at a trend level, F(2, 111)=2.76, p=.0677. Similar effects indicated that the negative association between PA and desire to smoke became stronger at higher levels of PR and NR smoking. However, PR nor NR smoking moderated the effect of NA on desire to smoke. These findings indicate that smokers who report using tobacco for either positive or negative reinforcement may be more prone to smoke in low-PA states, and may benefit from treatments that raise hedonic tone. Supported by NCI Predoctoral Fellowship in Cancer Prevention R25 CA 57730-11 awarded to Mr. Leventhal.

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PA5-4
ANGER AND PSYCHOBIOLOGICAL CHANGES DURING SMOKING ABSTINENCE: PREDICTION OF SMOKING RELAPSE
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Nicotine may be used to manage negative emotions, and recent research suggests that smokers with high levels of hostility may use cigarettes to cope with anger provoking situations. We examined the extent to which a high level of trait anger is associated with risk for relapse among smokers interested in cessation. Chronic smokers with different levels of trait anger provided reports of withdrawal symptoms, craving, and state anger, and collected salvia samples for cortisol during 24-hour ad libitum smoking and the first 24-hour abstinence period of a quit attempt. They also attended a laboratory session conducted after the 24-hour abstinence during which they performed a mental and social stress challenges and provided blood samples for adrenocorticotropic (ACTH) and cortisol assays. High trait anger was associated with greater increases in state anger, withdrawal symptoms, and craving during the first 24 hour of abstinence (r=.24, p<.001). It was also associated with greater ACTH concentrations during the laboratory session (f=3.20, p=.001). High trait anger was also associated with increased risk for early relapse (f=2.11, p=.05). The findings support the hypothesis that smokers high in anger trait may have greater mood difficulties during abstinence and may be more vulnerable to early relapse than smokers with low anger trait.

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PA5-5
EXPERIMENTALLY INDUCED ACUTE PAIN ENHANCES SMOKING URGE AND SMOKING BEHAVIOR
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Although pain and smoking have been long been associated in both the clinical and empirical literature, the subjective experience of pain has received surprisingly little attention as a potential motivator of smoking behavior. The main goal of this study was to determine whether experimentally induced situational pain would actuate an intensification of self-reported urge to smoke and lead to significant increases in immediate smoking behavior. We were also interested in whether the presence of smoking cues would interact with pain upon these outcomes. Participants were screened for contraindicative medical conditions and had to be between the ages of 18 and 65 years old (M=35.9; SD=11.8), smoke at least 20 cigarettes per day (M=22.4; SD=5.9), and have a pre-session expired carbon monoxide (CO) concentration >8 ppm (M=23.5; SD=11.6). A total of 132 smokers, stratified by gender, were randomly assigned to one of four conditions (Pain + Smoking Cue; Pain + Neutral Cue; No Pain + Smoking Cue; No Pain + Neutral Cue) in this 2 X 2 crossed factorial between-subjects design. Participants in the Pain conditions immersed their non-dominant hand into a circulating, cold-water bath maintained between 0-1 degrees Celsius, and participants in the No Pain conditions immersed their hand into a room-temperature bath. The smoking cue consisted of participants’ own pack of cigarettes, a lighter, and an ashtray. The neutral cue consisted of similarly placed, sized, and shaped office supplies. Dependent measures were smoking urge (QSU-B) and latency to smoke. As hypothesized, significant main effects revealed that urge ratings were greater for pain induction (p<.001, effect size, f=.39) and smoking cue (p=.04, f=18) conditions. The pain x cue type interaction was not significant (p=.55). The impact of pain on smoking urge did not appear to be mediated by negative affect. A significant main effect for pain induction on quicker latency to smoke was also revealed (p=.02, f=.21). This study provides the first experimental evidence that situational pain is a potent motivator of smoking, possibly independent of putative motive effects.

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PA5-6  PEOPLE AS CUEs TO SMOKE


Stimuli repeatedly present during smoking can become conditioned cues capable of triggering strong craving to smoke. Cue-reactivity studies have shown that smokers are highly reactive to smoking-related cues most proximal to drug administration (e.g., lit cigarettes, ashtrays). However, less is known about stimuli more distal to smoking behavior, which might also serve as salient cues to smoke. One such distal cue is the people around whom one typically smokes. People cues might be particularly important when smokers attempt to quit as they likely remain constant in the post-quitting environment, unlike proximal cues which quitting smokers often avoid, and might alone serve to trigger urges to smoke or motivate relapse. The present study examined smokers’ self-report reactivity to the people in their lives whom they associate with smoking and those they associate with not smoking. In a three-session within-subject study, smokers borrowed cameras to take pictures of the people around whom they do and do not smoke. During a later cue-reactivity session, smokers were exposed to pictures of their 2 personal smoking people and 2 personal nonsmoking people. Each of these pictures was yoked on age and sex to standard people pictures. Smokers viewed and vividly imagined being with each of the 8 people pictured. After each picture trial, self-report measures of craving, mood, and arousal were collected. Preliminary results from 24 subjects showed a main effects of Type (personal vs. standard) F(1,23)=8.9, p<.01, and Cue (smoking, nonsmoking) F(1,23)=19.3, p<.001, and a significant Type X Cue interaction, F(1,23)=31.6, p<.001. Post hoc analysis revealed that these effects were driven mainly by a large difference in craving as a function of seeing personal smoking people compared to personal nonsmoking people; whereas craving remained moderate for all standard people. These findings suggest that personal smoking people, in the absence of proximal cues, can elicit strong craving to smoke. Furthermore, people associated with not smoking might serve a protective function on craving to smoke. Additional results and the implications of these findings will be discussed.

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PA6-2  ACTUAL PRACTICE WHEN EVIDENCE IS UNCLEAR: HOW OFTEN DO PREGNANT SMOKERS USE CESSATION MEDICATIONS AND HOW OFTEN DO OBSTETRIC PROVIDERS RECOMMEND THEM?

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Backgrounds: Smoking is a major preventable cause of poor pregnancy outcome, but cessation rates achieved by behavioral counseling are modest. Use of smoking cessation medication (meds) in pregnancy is limited by uncertainty about safety and efficacy, but if behavioral strategies do not produce cessation, US guidelines recommend nicotine replacement (NRT) or bupropion (BUP) to be safer than smoking in pregnancy, especially for heavy smokers. Little is known about how often pregnant smokers use these meds or how often obstetric providers (OBs) discuss their use.

Methods: We analyzed data from the end-of-pregnancy (EOP) survey of 296 pregnant smokers enrolled in a randomized controlled trial of telephone counseling for smoking cessation. The intervention did not include meds; EOP validated cessation rate was 8.8% with no significant difference by group.

Results: 29.3% of respondents said that their OB had discussed using a cessation med, either NRT (26.5%) or BUP (12.2%). 10.1% of respondents had used a cessation medication during pregnancy (7.4% NRT, 3.4% bupropion). Med use in pregnancy was associated with older age, more education, living with a partner, not being nulliparous, having an OB who discussed med use, and having private health insurance (in a state where public insurance did not pay for cessation meds) (all p<.05) but not with intervention condition. In a multiple logistic regression model that adjusted for these factors, a pregnant smoker was more likely to use cessation meds if her OB discussed meds (AOR 7.6, 95% CI 3.2-17.9), if she had private vs public health insurance (AOR 7.8, 95% CI 1.7-3.5) and if she had a prior childbirth (AOR 4.5, 95% CI 1.7-11.6). Med use was not more common in women who smoked more cigarettes/day, had more nicotine dependence, or had already tried to quit during pregnancy, as guidelines recommend.

Conclusion: In a large sample of pregnant smokers trying to quit smoking, few recalled that their OBs discussed med use and even fewer women used a cessation med. More pregnant women might use cessation meds if OBs discussed them more often and if health insurance covered them.

Robert Wood Johnson Foundation’s SmokeFree Families Program.

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PA6-1  VOUCHER-BASED INCENTIVES FOR ABSTINENCE FROM CIGARETTE SMOKING IN PREGNANT AND POSTPARTUM WOMEN


Maternal cigarette smoking is the leading preventable cause of poor pregnancy outcomes in the U.S. Our group previously reported favorable results from a partially randomized study examining the use of abstinence-contingent vouchers to increase cessation rates during and following pregnancy among women still smoking at their first prenatal care visit. In the present fully randomized study, 77 women were assigned to a Contingent condition (n=37) wherein voucher delivery was dependent on biochemically-verified smoking abstinence or a Noncontingent condition (n=40) wherein voucher delivery was independent of smoking status. Participants were 24.3 + 5.2 yrs old, 94% Caucasian, completed 11.8 + 2.3 yrs of education, and smoked 18.6 ± 7.7 cigs/day prior to learning of the pregnancy and 8.7 ± 5.8 cigs/day at study admission. There were no significant differences in subject characteristics between treatment conditions. Vouchers were available during pregnancy (~$786 maximum) and for 3 months postpartum ($360 maximum). Participants were followed through 6 months postpartum. Three contingent and two non-contingent participants had adverse pregnancy outcomes and were excluded from the following results. Verified abstinence rates were significantly greater in the contingent vs. the non-contingent condition at the end-of-pregnancy 15/37 (41%) vs. 4/40 (10%) (p = .003) and 3-month postpartum 10/37 (27%) vs. 1/40 (3%) (p = .003) assessments, but not the 6-month postpartum assessment 3/37 (8%) vs. 1/40 (3%). These results replicate our prior results and support the efficacy of contingent vouchers for promoting and sustaining smoking cessation during pregnancy and the early postpartum period.

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PA6-3  EFFECTIVENESS OF ADDING NICOTINE REPLACEMENT THERAPY TO COGNITIVE BEHAVIORAL THERAPY FOR SMOKING CESSATION IN PREGNANT SMOKERS: THE BABY STEPS TRIAL


Objective: To determine if the addition of NRT to cognitive behavioral therapy (CBT) in pregnant women still smoking after the first trimester resulted in greater rates of smoking cessation.

Methods: Open-label randomized trial (Baby Steps) at 1:2 ratio of CBT only: CBT plus NRT, with follow-up through three months post-partum. One hundred eighty-one women were randomized to CBT only or CBT plus NRT. Primary outcomes were self-reported smoking status at 7 weeks post-randomization and 38 weeks gestation. Results: Women in the CBT plus NRT arm were three times more likely than women in the CBT only arm to have reported quitting smoking at both pregnancy time-points (after 7-weeks: 29% vs. 10%, p<.01; at 38 weeks gestation: 22% vs. 7%, p<.02). At an initial interim analysis, safety endpoints met a pre-defined stopping rule of a 2-fold difference between groups; recruitment was suspended. After completion of follow-up of all enrolled women, there were more negative birth outcomes in the CBT plus NRT arm than in the CBT only arm, although arm differences in prior history of preterm birth confounded these outcomes (adjusted risk difference 9%, 95% CI : -5%, 21%, p=.28).

Conclusion: The addition of NRT to CBT promotes smoking cessation in pregnant women. The trial was underpowered to interpret negative birth outcomes. Future trials are needed to determine the safety or harm of NRT use during pregnancy.

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PA6-4  
EFFECTS OF MATERNAL SMOKING DURING PREGNANCY ON INFANT BIRTH WEIGHT DEPEND ON MATERNAL NICOTINE METABOLISM


Low birth weight is one of the most costly consequences of maternal smoking during pregnancy. We propose that maternal nicotine metabolism moderates associations between maternal smoking during pregnancy and birth weight. We examined links between prospective-ly-measured, biochemically-validated maternal smoking, maternal nicotine metabolism (ratio of trans-3'-hydroxycotinine to cotinine: 3HC/COT), and offspring birth weight in a large population-based sample (National Collaborative Perinatal Project). Participants were 534 smoking mothers (11% African American, mean age 25±6) with serum cotinine values of 10+ ng/mL. Cigarettes per day (CPD) were assessed at each prenatal visit (Mean CPD=20, SD=10). Serum cot and 3HC were determined between gestation weeks 31 and 36. Infant birth weight was documented from medical charts. After inclusion of significant covariates and main effects of CPD, 3HC/COT, and cot, the interaction of CPD and 3HC/COT remained a significant predictor of infant birth weight (B=−27, p<0.05, R2=15). Specifically, infants of moderate smokers (<20 CPD) with slower nicotine metabolism (a group including disproportionately more African-Americans) were similar to infants of heavy smokers (20+ CPD), and were on average 161 grams lighter than infants of moderate smokers with faster metabolism. This is consistent with 50% increased risk of low birth weight in infants of moderate smokers with slower vs. faster metabolism. Little influence of metabolism on birth weight was evident for infants of heavy smokers, who weighed significantly less than moderate smokers with faster metabolism and very significantly less with slower metabolism. This study examined relationships between maternal smoking, fast auditory brainstem responses (ABR), and early language development to explore the role of maternal nicotine metabolism and effects of prenatal smoking on birth weight. Results have important public health and clinical significance. Infants of moderate smokers with lower nicotine metabolism may be at heightened risk for morbidity and costs resulting from decreased birth weight, similar to infants of heavy smokers. As African-Americans are disproportionately represented in the moderate-smoking-slower metabolism group, targeted intervention efforts may be warranted.

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PA6-5  
THE IMPACT OF MATERNAL SMOKING ON FAST AUDITORY BRAINSTEM RESPONSES AND EARLY LANGUAGE DEVELOPMENT

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The impact of maternal smoking on fetal growth retardation is well established but the neurobehavioral outcomes of maternal smoking during pregnancy are less well understood. This study examined relationships between maternal smoking, fast auditory brainstem responses (ABR), and early language development to explore the role auditory processing plays in language deficits seen among children of women smokers. Participants were recruited from hospitals in the Atlanta metropolitan area and seen at 6-months. Cigarette use was documented by maternal report and cotinine levels found in blood and urine. Infants were excluded if they had any serious medical or developmental problems or were premature. All infants had to pass the newborn hearing exam. At the follow-up, infants (n=186) were given the Bayley Scales of Infant Development, 2nd Edition and items were categorized into language and cognitive clusters. 1,000 fast auditory brainstem responses were collected and analyzed while infants slept using Biopac's STM100C stimulator, which produced .08 ms pulse rate clicks in a tubephone placed in the infant's ear. Latency and amplitudes of Waves 1, 3, and 5 were obtained on 146 valid samples. After controlling for age, smoking during pregnancy was negatively related to performances on the language cluster of the BSID-II and to latency of auditory brainstem responses. A hierarchical regression analysis was used to assess the predictive utility of maternal smoking and ABR responses in understanding language skills. After controlling for age and maternal smoking, ABR responses did account for significant unique variance but when baby and ABR responses were included in this model, the relationship between maternal smoking and language skills was no longer significant. This suggests that the relationship between maternal smoking and early language development may be mediated by ABR responses, which reflect the initial stimulus detection of the auditory stimuli. Such alterations in the neural encoding of auditory stimuli may be linked to the deficits in phonemic perception and language development previously found.

National Institute of Child Health and Human Development

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PA6-6  
TOBACCO USE DURING PREGNANCY: WOMEN'S PERCEPTIONS AND SOCIAL REPRESENTATIONS

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It is now well documented that tobacco use during pregnancy is more prevalent among disadvantaged women and that it must be considered as a determinant factor of socioeconomic disparities in prematurity and intrauterine growth retardation. Children, whose mothers are from low-income groups and smoke, are at higher risk for poor health outcomes compared to the women who do not seem to help them stop smoking. The meaning that women ascribe to their tobacco use during pregnancy is poorly documented. Does dissemination of information on the effect of tobacco use on the health of children reach mothers-to-be? What factors have an impact on the perceptions and integration of this information? This study tried to identify the perceptions and social representations of mothers-to-be regarding tobacco use during pregnancy, as well as their perceptions of the information they receive. They were analyzed using qualitative methods. Unstructured face-to-face interviews were conducted with 34 women from two socioeconomic backgrounds selected in prenatal services. Additional data were collected from two focus groups with health professionals working with pregnant women. All participants considered that tobacco use during pregnancy was socially reprehensible, although many were unable to identify its impact on the fetus. The capacity of those who smoke to modify their habit was influenced either by their perception of risk or their dependence. In addition to day-to-day life stressors, social norms, personal experiences and social networks contribute to risk perception and also to decision-making regarding tobacco use. According to women’s accounts, multiple messages and discordant information in public health media messages. To make decisions. To support disadvantaged pregnant women to stop smoking we should consider—in public health messages as well as within programs targeted to this group—not only their socioeconomic situation but also contextual factors that contribute to their perception of risk and dependence. Information and counseling on tobacco use during pregnancy must be consistent, clear, and contextualized.

Quebec Minister of Health and Social Services.

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PA7-1  
ASSOCIATION BETWEEN EXPOSURE TO MOVIE SMOKING AND ESTABLISHED ADOLESCENT SMOKING

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Objective: To assess the association between exposure to smoking occurrences contained in 532 popular movies and established smoking (ES, lifetime smoking of >=100 cigarettes).

Methods: In September 2003, we enrolled 6652 U.S. adolescents in a random digit dial telephone survey and resurveyed them at 6-month intervals, 8M (n=5503), 16M (n=5019), and 24M (n=4675). Using previously validated methods, we estimated baseline exposure to smoking occurrences in 532 recent box-office hits. A discrete hazard interval model was used to assess the hazard-odds of ES for each of the three exposure periods as a function MSE, while controlling for sociodemographics, other social influences, personality factors and parenting style. MSE was modeled in increments of 500 movie smoking occurrences (range of exposure 19-2500 smoking occurrences).

Results: The incidence of ES was from 7.5, 15, and 15 per 1000 person-years of observation for the 0-6M, 6-18M and 18-24M observation periods respectively. MSE was strongly associated with the incidence of ES at each interval, and the adjusted overall hazard odds of becoming an established smoker during follow-up was 1.24 (95% CI 1.1, 2.5) for each 500-occurrence increase in MSE. Other strong predictors of smoking initiation included age, parent, sibling or friend smoking, and sensation seeking. Teens that were below the median on a index of sensation seeking and rebelliousness were significantly (p=0.026) more susceptible to the movie smoking exposure effect (hazard odds=1.78 [1.29, 2.46]) compared with teens that were above above median (hazard odds=1.18 [95% CI 1.04, 1.39]).

To explore whether U.S.-specific content, exposure to smoking contained in popular contemporary movies was associated with established smoking. The finding that the association was stronger for low sensation seeking/rebelliousness adolescents undercuts the argument that movie viewing is simply a general marker for the high-risk teen.

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PA7-2 SMOCKING IN THE MOVIES: EVIDENCE AND IMPLICATIONS OF IMPACT AMONG YOUNG ADOLESCENTS IN MEXICO

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A number of studies indicate that exposure to smoking in movies influences youth smoking initiation in the US; however, whether this relationship holds among youth from other countries is unknown. We addressed this question using baseline data from a school-based sample of 3,876 young adolescents (mean = 13.4 years old; 51% female). Covariates included in this analysis were age, gender, ethnicity, and smoking attitudes. After adjusting for the effect of movie exposure, tested pathways from initial movie exposure to subsequent smoking onset were age, gender, ethnicity, and smoking attitudes. After adjusting for the effect of movie exposure, tested pathways from initial movie exposure to subsequent smoking onset were age, gender, ethnicity, and smoking attitudes. After adjusting for the effect of movie exposure, tested pathways from initial movie exposure to subsequent smoking onset were age, gender, ethnicity, and smoking attitudes.

Conclusions: Part of the effect of movie exposure is attributable to a mechanism in which youth who frequently view smoking in movies develop more positive expectancies about smoking, and part to a mechanism involving increased affiliation with peer smoking. Although the cross sectional nature of this design prevents strong causal statements from being made, these results suggest a troubling new role for tobacco industry advertising and may call for further increased scrutiny of tobacco industry advertising practices.

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PA7-3 EFFECTIVE MOVIES ON ADOLESCENT SMOKING ONSET MEDITATED THROUGH CHANGES IN EXPECTANCIES AND PEER AFFILIATIONS

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The influence of peer group on adolescents’ smoking has been well established. Nonsmoking adolescents who associate with smoking peers are at greater risk of smoking than if they associate with nonsmoking peers. However, significant questions about this domain of inquiry remain unanswered, among them: What factors influence whether an adolescent chooses to associate with smoking peers versus nonsmoking peers? This study focused on understanding how exposure to tobacco industry marketing is related to friend choice (having smoking versus nonsmoking friends) among never smoking adolescents. A sample of n=91 (54% female; 79% Caucasian; 12% African-American) middle and high school students (never smoked, even a puff) was recruited to participate. Their M age was 13.6 (SD=1.9) and there was an even distribution of participants at each age. Participants completed several assessments concurrently as part of the study. Logistic regression was used to predict friend choice (number of smoking friends reported was recoded as having smoking friends: yes or no) from the main independent variable, aggregate level of exposure to pro-tobacco advertising via multiple media outlets (i.e., television, internet, magazines, point-of-sale, and billboards). Covariates included in this analysis were age, gender, ethnicity, and smoking attitudes. After adjusting for the effect of these covariates, exposure to pro-smoking advertisements significantly predicted likelihood of having friends who smoked (p<.001). In an illustration of the direction of these effects: adolescents who reported no exposure to smoking media had an 8% chance of having friends who smoked; those who reported a moderate level of exposure to smoking media had a 59% chance of having smoking friends; and those who had an extremely high level of exposure to smoking media had a 95% chance of having friends who smoked. Although the cross sectional nature of this design prevents strong causal statements from being made, these results suggest a troubling new role for tobacco industry advertising and may call for further increased scrutiny of tobacco industry advertising practices.

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PA7-4 TELEVISION MOVIE TRAILERS: UNDERMINING RESTRICTIONS ON ADVERTISING TOBACCO TO YOUTH

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Objective: To determine the proportion of televised movie trailers that include images of tobacco use during a one-year period and the extent of youth exposure to those trailers.

Design: Content analysis of all movie trailers shown on television from August 2001 through July 2002 (n=216), combined with Nielsen data measuring media exposure.

Main Outcome Measures: Exposure among 12-17 year olds to televised movie trailers that included smoking imagery. Results: Of the movie trailers televised during this period, 14% (31 trailers) included images of tobacco use. Tobacco use was shown in 24% of the trailers for R-rated movies and 7% of the trailers for PG 13 and PG-rated movies. Ninety-five percent (95%) of all 12-17 year-olds in the US saw at least one movie trailer depicting tobacco use on television during this one year period: 89% saw at least one of these trailers three or more times.

Conclusions: Nearly all 12-17 year olds in the U.S. were exposed to images of tobacco use on television in the context of a movie trailer during the study period. Given the relationship between youth exposure to tobacco use in movies and smoking initiation, the public health community should work to enact policy to reduce or eliminate the influence of tobacco use in televised movie trailers.

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PA7-6 EXPOSURE TO SMOKE MEDIA AND FRIEND CHOICE IN ADOLESCENCE

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This research was funded by American Legacy Foundation and National Cancer Institute Grant CA-61021.

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PA8-1
SMOKING TRENDS AMONG FILIPINO ADULTS IN CALIFORNIA, 1990-2005
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Objective: Asians/Pacific Islanders have become one of the largest ethnic groups in the United States. Filipinos comprise about 20% of this subgroup and continue to rapidly increase in proportion. Despite this, few studies have examined smoking prevalence rates in Filipinos specifically, and none have described trends over time.

Methods: We estimated trends in smoking prevalence in California from 1990 to 2005 using logistic regression and data from the California Tobacco Surveys 1990-2005. All who self-identified as Filipino were grouped as such even if they selected another ethnic category.

Results: Between 1990 and 2005, current smoking prevalence among Filipinos in California is estimated to have declined by about 1.3 percent per year (85% CI: 0.97-3.3%). The prevalence of current smoking for Filipino males declined in every year from 23.7% (+/-5.0) in 1990 to 12.6% (+/-2.3) in 2002, with a non-significant increase in 2005 to 20.1% (+/-6.8). Although there was an observed decline in the proportion of current smokers among Filipino females, trends were less apparent (p=0.34), with current smoking rates at 13.8% (+/-3.4) in 1990 to 13.8% (+/-2.5) in 2005. To our knowledge, this is the first report to describe trends in smoking prevalence for Filipino adults. There has been an apparent decline in current smoking prevalence among Filipino males under the California Tobacco Control Program. The data for Filipino females are more ambiguous. However, the decreasing trends in Filipinos parallel in comparison to the non-Hispanic White. This underscores the need to examine issues such as daily and non-daily smoking, smoking consumption, cessation, acculturation, and policy impact, as these factors may provide insight into the relatively lesser decline in smoking prevalence rates among Filipinos. Culturally appropriate tobacco prevention and cessation programs targeting this underserved population may further decrease their smoking prevalence.

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PA8-2
IMPACT OF LIVING WITH A SMOKER ON CESATION BEHAVIOR: PATTERNS ACROSS DEMOGRAPHIC SUBGROUPS
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Background: Smokers who share a home with another smoker are less likely to attempt to stop smoking. Whether this effect varies among different demographic subgroups is not known. We analyzed how demographic characteristics affect patterns of quit attempts in New York City (NYC) smokers.

Methods: Prevalence of smoking and household and demographic characteristics were estimated using data from the NYC Community Health Survey, a random-digit dial telephone survey of approximately 10,000 NYC adults. We report univariate and bivariate results, weighted for non-response and age-standardized to the 2000 US Census population.

Results: About one quarter (27.2%) of smokers live with a smoker; the likelihood of living with a smoker does not differ significantly by gender or race. Both female and male smokers are less likely to attempt to quit if they live with a smoker than if they do not. Although this effect was of marginal statistical significance for male smokers (52.0% vs. 63.7%, p<0.01 for females; 55.0% vs. 61.2%, p=0.08 for males). However, the impact of living with a smoker on quit attempts varies across gender subgroups. Among females, living with a smoker appears to have the largest effect on Hispanic; this group is less likely to make a quit attempt when living with a smoker (53.1%) than when not living with a smoker (74.9%, p<0.01). The effect of living with a smoker on quit attempts was lessened for non-Hispanic white females (41.4% vs. 54.5%, p=0.01) and was not significant for non-Hispanic black females. Among males, the effect of living with a smoker is largest among non-Hispanic males; this group is less likely to make a quit attempt when living with a smoker (42.4%) than when not living with a smoker (57.4%, p<0.01). The effect of living with a smoker on quit attempts was not significant among non-Hispanic black and Hispanic males.

Conclusion: These results provide evidence that cessation interventions may be more effective if they focus on households in addition to individuals. The results also identify demographic subgroups that may need household-level targeted methods to reduce smoking.

No additional funding was provided.

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PA8-3
TACTICS TO REDUCE SMOKING AMONG FACES WITH POSTERIOR SEGMENT OPHTHALMOLOGIC DISEASE

Background: Patients with posterior segment ophthalmologic disease (PSOD) such as macular degeneration (MD) experience frequent hospital visits and are at an increased risk of smoking initiation. This study evaluates the effectiveness of interventions focusing on smoking cessation and reduction in patients with PSOD.

Methods: We conducted a prospective controlled trial in the Eye Surgeons of New York (ESNY) and NINE (New York Interventions Eye Network) to evaluate the impact of smoking cessation interventions on smoking behavior in patients with PSOD.

Results: Among patients with MD, 29.5% were current smokers, 42.3% were former smokers, and 28.2% were never smokers. The intervention group showed a statistically significant decrease in smoking prevalence from 24.5% to 15.4% (p<0.05) compared to the control group, which remained at 29.4%. The intervention group also showed a statistically significant decrease in the number of smoking units from 20.5 to 12.1 (p<0.05) compared to the control group which remained at 21.0 units.

Conclusion: These findings suggest that interventions targeting smoking cessation and reduction in patients with PSOD can be effective. Further research is needed to evaluate the long-term impact of these interventions and to identify best practices for smoking cessation in this population.

No additional funding was provided.

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PA8-6 IMPACT AND PERCEPTIONS OF WARNING LABELS ACROSS SEVEN COUNTRIES: FINDINGS FROM THE INTERNATIONAL TOBACCO CONTROL POLICY EVALUATION PROJECT

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Article 11 of the Framework Convention on Tobacco Control calls for prominent warning labels on tobacco packaging, but there remain critical questions on important issues for countries wishing to implement effective warning labels; thus, research that examines the impact and perceptions of warning labels that vary in size, location, and presence of graphic elements is valuable in providing the evidence base for countries. This paper presents cross-national data from seven countries in which the ITC Project is conducting annual cohort surveys: Canada, United States, United Kingdom, Australia, Thailand, Malaysia, and South Korea. In each country a probability sample of adult smokers (n about 2,300 in the first countries, n=1,000 in the second) responds to a 45-minute annual survey covering all of the demand reduction policies of the FCTC, including a set of questions asking about smokers' perceptions and reactions to warning labels in their respective countries. Among high-income countries, size and presence of graphic elements (in Canada) were strongly associated with higher levels of salience, thinking about the warning labels as a source of anti-smoking information, and recognizing graphic elements as warnings about public health risks. In both Malaysia and Thailand (before their implementation of graphic warnings), the levels of salience, thinking about the warning labels, and mentioning warning labels as a source of anti-smoking information were, on average, higher than they were in the five high-income countries. These findings suggest that for low- and middle-income countries, where there are fewer other channels and information sources about the harms of smoking, warning labels play that role. This suggests that low- and middle-income countries that have ratified the FCTC would do well to implement strong warnings with graphic elements. This paper will also present analyses of the relationships between label-relevant variables (e.g., "labels make you think about the health risks of smoking") and outcome variables relevant to public health (e.g., quit intentions, actual quit attempts), and will compare the pattern of results across the seven countries.

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PA9-1 THE SHORT END OF THE SEROTONIN TRANSPORTER STICK STRIKES AGAIN: EFFECTS OF SERT GENOTYPE ON SMOKING ABSTINENCE SYMPTOMS

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In a study designed to better characterize individual differences in response to tobacco abstinence symptoms and the effect of nicotine replacement on these symptoms, smokers completed an abstinence symptom measure twice per week for two weeks and were then abstained for 45 days. Half were randomly placed on a placebo patch while the others were placed on an active nicotine patch for the first 38 days of abstinence. Large financial incentives resulted in a high percentage of biochemically verified sustained abstinence and experiment completion—81% (73/90) in the nicotine patch and 84% (68/81) in the placebo group. Anger-irritability, depression, and anxiety increased significantly in individuals with one or two short alleles for the serotonin transporter (SERT) gene but did not increase in individuals with two long alleles. While the active nicotine patch relative to the placebo patch reduced abstinence-related elevations of negative affect, genotype did not modulate the effects of patch type (active versus placebo). If replicated, there could be important implications of these findings for the treatment of tobacco smoking. The failure of patch type to interact with genotype suggests that these genetic differences in affective responses to smoking may be driven by complex and/or gene-environment interactions. This study was funded by a grant from the National Institute on Drug Abuse, R01 DA12289, awarded to the first author.

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PA9-2 THE DRD2 TAQ1 POLYMORPHISM INTERACTS WITH GENDER AND SMOKING DEPRIVATION IN PREDICTING SELF-REPORTED WITHDRAWAL

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It is well established that nicotine increases dopamine (DA) activity, while nicotine deprivation is associated with DA depletion. Given that the A1 allele on the DA receptor (D2 gene) (DRD2) Taq1 polymorphism lower D2 receptor density, it is possible that A1 allele carriers are particularly susceptible to nicotine withdrawal effects following a period of abstinence. Furthermore, some data suggests that A1 allele carriers are more common among male (but not female) smokers. Therefore, we hypothesize that males who carry the A1 allele might be more susceptible to withdrawal symptoms following overnight nicotine deprivation. We analyzed data from 60 smokers (30 males and 30 females) who reported smoking an average of 15 or more cigarettes per day during the past year (mean=21.1). Half the participants were randomly assigned to overnight deprivation, and the other half to ad lib smoking. Compliance with smoking deprivation and satiation instructions was verified via CO breath assay. Buccal cells were collected for DNA analysis, and several questionnaires were completed, including the Wisconsin Smoking Withdrawal Scale (WSWS), DRD2 Taq1 genotype, gender, and deprivation group were analyzed as predictors of self-reported withdrawal symptoms. As expected, there were deprived versus satiated group differences in WSWS withdrawal, but there were no main effects of DRD2 or gender on self-reported withdrawal. Three-way interactions (gender by DRD2, gender by deprivation group, deprivation group by A1 allele) were significant in predicting the WSWS composite scale (p<.04), as well as the WSWS concentration (p=.01), anxiety (p=.05), and anger (p=.06) subscales. Simple effect analyses indicated that smoking deprived A1 allele carrying men experience greater withdrawal than both smoking deprived men with the A2A2 genotype and smoking deprived women with the A1 allele. These findings suggest that A1 allele carrying men are more vulnerable to smoking withdrawal, which may be an explanation for the greater preponderance of A1 alleles found among male smokers.

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PA9-3 GENETIC VULNERABILITY TO D5M-IV NICOTINE WITHDRAWAL: AUSTRALIAN AND FINNISH FAMILIES

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Twin studies suggest that genetic factors influence nicotine withdrawal (NW; heritability=45%). Only one previous linkage study has published findings on NW (Swan et al., 2006; LOD=2.7, Chr.8 at 159cM). As part of an international consortium, genome-wide scans (using 384 autism microsatellite markers) and telephone diagnostic interviews were conducted on Australian and Finnish families ascertained from twin registries and selected through smoking index-cases. For these analyses, sources were families with at least two adult offspring who reported a history of DSM-IV NW. Thus, linkage analyses were conducted on genome-scan data from 198 families [153 Australian (AUS) and 45 Finnish (FIN) families, combined (COMB)]. This study used an affected-sib pair design and conducted the linkage analyses using MERLIN. Linkage signals with LOD scores greater than 1.5 were found on three chromosomes: 8 (FIN: LOD=1.95; COMB: LOD=1.88), 7 (COMB: LOD=1.64), and 11 (FIN: LOD=3.49; AUS: LOD=1.54; COMB: LOD=2.51). The multipoint LOD score of 3.49 at 17.4 cM in FIN met genome-wide significance (p<.02-1000 simulations). The highest single-point in this region was LOD=2.31. The positions for at least four alleles. While the active nicotine patch relative to the placebo patch reduced serotonin transporter (SERT) gene but did not increase in individuals with two long alleles. The active nicotine patch relative to the placebo patch reduced abstinence-related elevations of negative affect, genotype did not modulate the effects of patch type (active versus placebo). If replicated, there could be important implications of these findings for the treatment of tobacco smoking. The failure of patch type to interact with genotype suggests that these genetic differences in affective responses to smoking may be driven by complex and/or gene-environment interactions. This study was funded by a grant from the National Institute on Drug Abuse, R01 DA12289, awarded to the first author.

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THE EFFECTS OF SMOKING-RELATED STIMULI ON COGNITIVE PERFORMANCE

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Tobacco abstinence is characterized by decreased heart rate (HR), aversive symptoms, and cognitive decrements. Nicotine can attenuate some of these abstinence-induced effects, as can non-nicotine, smoking-related stimuli (i.e., smoking a denicotinized cigarette). However, little research has focused on the influence that smoking-related stimuli have on abstinence-induced cognitive decrements. In this study, 50 overnight abstinent smokers completed four, double-blind laboratory sessions corresponding to a 2x2 design where transdermal nicotine dose (TN, 0 or 21 mg) was crossed with type of cigarette (nicotine-containing [NIC] or not [DENIC]). Cigarettes were smoked 4 hours after TN administration. Outcome measures included HR, withdrawal symptoms, and cognitive performance (verbal and spatial working memory, attention). The greatest smoking-induced HR increases were observed in the 0 mg/NIC condition (i.e., 10.5 bpm). Withdrawal symptoms were lower after 21 mg TN or smoking (independent of cigarette type). Working memory response time was lower in the 21 mg TN condition and decreased after smoking (independent of cigarette type). Alerting and executive function aspects of attention were also improved by smoking, independent of cigarette type. In contrast, working memory accuracy was generally unaltered by TN dose, and higher after NIC (e.g., verbal accuracy was 57% in Omg/DENIC, 57% in 21 mg/DENIC, 61% in Omg/NIC, and 62% in 21mg/NIC). Abstinence-induced decrements in working memory response time, alerting, and executive function may be ameliorated by exposure to smoking-related stimuli, suggesting that these decrements may not be due solely to nicotine withdrawal.

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SELECTIVE ATTENTION OF SMOKERS AND NONSMokers AS MEASURED BY THE D2 TEST OF ATTENTION

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Nicotine dependence has been related to aspects of human cognition, particularly selective attention and working memory. While some studies suggest that abstinence from smoking can impair attention in nicotine-dependent individuals, and that smoking can reverse withdrawal-related deficits, there are also reports of no effect or disturbances in performance after cigarette smoking. To expand knowledge in this area, we explored whether smokers from nonsmokers differ in selective attention, and whether acute cigarette smoking or overnight abstinence from smoking affects performance in this cognitive domain. We also examined the relationship between performance and level of nicotine dependence, smoking history, and cigarette craving.

Nicotine-dependent smokers (n=39) and nonsmokers (n=48), 18 to 55 years old, were tested on the d2 Test of Attention in two sessions. The d2 test is a timed test of selective attention that measures processing speed and rule compliance during the discrimination of similar visual stimuli. All participants were tested on two separate test days. For smokers, testing on one day began after ad libitum smoking (<45 min since last cigarette); and on the other day, it began after overnight abstinence (>18 h since their last cigarette). Each test day included two test blocks with an intervening break, during which the smokers smoked one cigarette. Nonsmokers did not smoke during the study. Analyses of covariance revealed an interaction between gender and smoking history on task performance, which was primarily driven by the relatively poor performance of male smokers. Performance among smokers was correlated negatively with level of nicotine dependence (as measured by the Fagerström Test for Nicotine Dependence), which tended to be more severe among male smokers. This signal in brain regions including ant. cingulate and caudate nucleus, as well as in the cerebellum and brain stem (p<0.002). This study is the first to assess changes in BOLD signal during smoking. The results of studies in progress may illuminate the answers to a number of additional questions relating to the effects of gender, dependence, abstinence, and placebo on smoking-related BOLD signal changes in living human brain.

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PA10-3 ATTENTIONAL MECHANISMS AND THEIR ASSOCIATIONS WITH NICOTINEDEPENDENCE AND SUCCESS DURING A QUIT ATTEMPT

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Theory suggests that attentional systems may index addiction motivation and play a role in related phenomena such as relapse. In this study, withdrawn smokers (n=110, 41% male, 83% Caucasian) completed an information processing task where they indicated the direction that a target was pointing (e.g., ><>). Before the presentation of that target, participants were presented with two images, flanking a fixation point. One image displayed neutral content while the other displayed negative, positive or smoking content (e.g., gun, puppy, lit cigarette). Images were presented for 500 or 2000 ms duration. The target stimulus then replaced one of the images (on the right or the left side of the screen). Our analysis yielded four indices of information processing. First, participants were slower to respond on trials with smoking and negative images than with positive images (p<.001), which may indicate the occupation of working memory resources by smoking and negative stimuli. Second, the longer slide duration provided greater facilitation of responding for negative than smoking image trials (p<.01), providing an index of the degree to which executive control could be used to overcome the more automatic slowing on these trials. Third, participants responded more quickly when the target stimulus replaced the smoking or affective slides (vs. the neutral slide; <.001), which may index strength of orienting response to these motivationally relevant images. Finally, participants responded more quickly when the target stimulus pointed in the same direction as the side of the screen on which it appeared (p<.001), which may index the degree to which executive control can be used to overcome response pattern. The relationships between all four of these information processing indices and measures of nicotine dependence and relapse were examined and will be discussed. For example, the size of the slide duration facilitation effect for smoking slides predicted relapse at two weeks post cessation (p<.02). These preliminary results suggest that individual differences in the attentional processing of drug cues may account for variation in the likelihood of staying quit.

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PA10-4 ATOMOXETINE AND BUPROPION AMELIORATE NICOTINE WITHDRAWAL-ASSOCIATED DEFICITS IN CONTEXTUAL LEARNING: INVESTIGATION OF THE NEURAL SUBSTRATES OF NICOTINE WITHDRAWAL

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Background: Despite known health risks associated with smoking, nicotine is one of the most heavily used and abused addictive drug. In both humans and lab animals, nicotine withdrawal is associated with disrupted cognitive function. Therapeutic interventions that reduce nicotine withdrawal-associated deficits in cognition may be effective in aiding in smoking cessation. This study investigated the effects of atomoxetine (a norepinephrine reuptake inhibitor used in treating attention deficit hyperactivity disorder) and bupropion (a dopamine and norepinephrine reuptake inhibitor currently approved for assisting in smoking cessation) on nicotine withdrawal-associated deficits in contextual learning, and investigated the neural substrates of nicotine withdrawal-associated deficits in contextual learning.

Methods: The effects of atomoxetine and bupropion on withdrawal from 14 days of chronic nicotine administration on contextual fear conditioning were assessed in C57BL/6 mice. Mice were trained in contextual conditioning using two co-terminating conditioned stimulus (CS; 30 second, 85 dB white noise) — unconditioned stimulus (US; 2 second, 0.57 mA foot shock) pairings, and testing for freezing to the training context occurred 24 hours later. Animal studies were approved by the Institutional Animal Care and Use Committee and were conducted in accordance with the National Institutes of Health Guide for the Care and Use of Laboratory Animals.

Results: Nicotine withdrawal after 14 days of chronic treatment disrupted contextual learning. These deficits were ameliorated by treatment with atomoxetine and bupropion. The withdrawal deficits in contextual learning appear to be mediated by changes in hippocampal function.

Conclusions: These findings suggest that withdrawal from nicotine disrupts hippocampal function, and that both atomoxetine and bupropion may facilitate smoking cessation by potentially reversing nicotine withdrawal-associated cognitive deficits that could lead to relapse.

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PA10-5 EFFECTS OF ACUTE NICOTINE ON MOTOR PERFORMANCE IN ATTENTION-DEFICIT/ HYPERACTIVITY DISORDER (ADHD)

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ADHD is one of the most common child psychiatric disorders affecting 5-7% of all children. Deficits in fine and gross motor skills (measured with reaction times) are seen in children with ADHD. People with ADHD smoke at higher rates than the general population and have less success quitting smoking than those in the general population. In addition, adolescents with ADHD initiate smoking at a younger age than adolescents without ADHD. Nicotine enhances motor performance on tests of finger tapping, and flight simulation. Nicotine also produces cognitive benefits and ADHD symptom reduction in persons with ADHD. These findings support the notion that people with ADHD may use smoking as a form of self-medication. Our lab has shown the ability of acute nicotine to normalize behavioral inhibition in ADHD. The current study extends the use of our paradigm to study motor rather than cognitive performance. This was a within-subject, acute, double blind study with three drug conditions: transdermal nicotine (7 mg for 45 minutes NIC), oral methylphenidate (20 mg immediate release MET) and matched placebos. Subjects were non-smoking young adults (n=9) diagnosed with DSM-IV ADHD-Combined type. Dependant measures included the Purdue Pegboard, the Compensatory Tracking Task (CTT), and the Choice Reaction Time Task (CRT). The results found a trend (p=.08) for a drug effect on the CTT. Individual contracts revealed that methylphenidate, but not nicotine significantly (p<.05) reduced tracking errors on the CTT. There was a trend (p=.08) for a significant drug effect on the motor component of the CTT with nicotine resulting in significantly (p=.05) slower motor reaction time than placebo. There were no significant drug-related changes in performance on the Purdue pegboard. These data suggest that nicotine does not enhance, and may impair motor performance ADHD. This is in contrast to positive effects of nicotine on cognition in our previous studies. It is possible that any positive effects of nicotine on motor performance would be seen at a different dosage or at a different time than positive effects on cognition.

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PA10-6 SAFETY AND FEASIBILITY OF ATOMOXETINE FOR SMOKING CESSATION IN YOUNG Smokers WITH AND WITHOUT ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD): A PILOT STUDY

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Introduction: Atomoxetine is a nor-adrenergic medication approved for treatment of ADHD. Animal data suggest potential efficacy of atomoxetine for smoking cessation. In this study, we present safety and feasibility of atomoxetine for smoking cessation in young smokers with and without ADHD.

Methods: Twenty-six young smokers (mean age 24; range 17-29), 14 without and 12 with ADHD, were recruited by media advertisements for a 12 week smoking cessation study. After one-week atomoxetine titration, all participants received atomoxetine dose closest to 1.2mg/kg (maximum dose 80 mg) for 8 weeks and returned for follow up at 12 weeks. Participants also received two brief smoking cessation counseling sessions. Self reported smoking, carbon-monoxide (CO), urine dipstick cotinine levels, ADHD symptoms, weight, and adverse events were monitored during the study.

Results: Among subjects with ADHD, there was a significant reduction (p=0.023) in ADHD symptoms as measured by the ADHD rating scale (ADHD-RS). Adverse events were minor with no serious adverse events reported. ADHD smokers had poorer retention in the study as compared to non-ADHD smokers (p=0.026). There was a trend for smokers with ADHD to have longer lifetime duration of smoking. There was no significant weight change among participants from baseline.

Conclusion: Atomoxetine appears safe to use in young smokers with and without ADHD. This is in contrast to positive effects of nicotine on cognition in our previous studies. It is possible that any positive effects of nicotine on motor performance would be seen at a different dosage or at a different time than positive effects on cognition.

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Varenicline, an alpha-4 beta-2 nicotinic acetylcholine receptor partial agonist, has demonstrated efficacy for smoking cessation, but the effect of nicotine dependence level on quit outcomes with varenicline is unknown. A post-hoc analysis was conducted to evaluate whether baseline nicotine dependence, measured by the Fagerstrom Test for Nicotine Dependence (FTND) score and cigarettes smoked per day (CPD), influences continuous abstinence rates (CARs). Pooled data were analyzed from 3 randomized, double-blind, Phase 2/3, multicenter trials. Subjects received varenicline 1 mg BID (n=944) or placebo (n=804) for 12 weeks, followed by 40 weeks of non-drug follow-up. The primary endpoint was carbon monoxide-confirmed, 4-week CAR for Weeks 9-12, which was 45.9% for varenicline and 16.9% for placebo (odds ratio [OR] 4.13; 95% confidence interval [CI] 3.29, 5.18). The CARs for Weeks 9-52 were also assessed and were 22.6% for varenicline and 8.6% for placebo (OR 3.17; CI 2.36, 4.24). Outcomes were analyzed by baseline FTND score (with 0-3, 4-6, and 7-10 representing mild, moderate, and severe dependence) and by CPD (with <20, 20-<30, and >30 representing low, medium, and high CPD). For all FTND scores, the 4-week CAR was greater for varenicline than placebo: mild 55.1% vs. 18.9% (OR 5.49; CI 3.38, 8.93); moderate 48.4% vs. 20.7% (OR 3.42; CI 2.50, 4.67); and severe 39.5% vs. 10.3% (OR 3.85; CI 2.50, 6.38). These effects persisted on CARs to Week 52: mild 27.6% vs. 8.9% (OR 5.28; CI 3.25, 8.59); moderate 23.0% vs. 11.3% (OR 4.31; CI 2.12, 7.34); and severe 18.8% vs. 4.4% (OR 4.91; CI 2.50, 9.64). Similarly, CARs by baseline CPD were better for varenicline than placebo both as 4-week CAR: low 52.2% vs. 22.8% (OR 3.64; CI 2.49, 5.32); medium 44.9% vs. 14.4% (OR 3.47; CI 2.36, 6.62); and high 39.5% vs. 13.4% (OR 3.85; CI 2.32, 6.38); and as Week 9-52 CAR: low 27.9% vs. 12.0% (OR 2.77; CI 1.73, 4.41); moderate 20.1% vs. 5.7% (OR 4.31; CI 2.62, 7.07); and high 20.5% vs. 10.3% (OR 2.25; CI 1.24, 4.08). These data suggest that varenicline is efficacious for smoking cessation regardless of FTND score or CPD at baseline. Trials were funded by Pfizer Inc.

Trials were funded by Pfizer Inc.
PA11-3  EFFECT OF VARENICLINE ON CUE-PROVOKED CIGARETTE CRAVING AND ACUTE NICOTINE WITHDRAWAL

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The efficacy of varenicline tartrate, an alpha 4 beta 2 nicotinic receptor partial agonist, has been established for the treatment of smoking, but little is known about its mechanisms of action. We evaluated the effect of varenicline on cue-provoked craving and acute withdrawal using a randomized, double-blind, placebo-controlled, cross-over design.

Subjects: 40 smokers (36 yrs; 21 cpd; FTQ = 6), not interested in quitting. Following overnight abstinence (12 hrs), subjects received either 2 mg varenicline or placebo. Cue-reactivity was assessed 4 hours later: subjects were exposed (1 min) to a cigarette and a neutral cue in a pre-assigned sequence (active-neutral; neutral-active). In the cigarette cue condition, subjects lit and held their preferred brand of cigarette and then extinguished it. In the neutral cue condition subjects held a pencil.

Measures: Craving (Smoking Urges Scale) and withdrawal (Minnesota Nicotine Withdrawal Scale) post cue exposure and at 5 and 10 mins. Varenicline and placebo sessions were separated by a 1 week wash-out period. Craving and withdrawal scores were analyzed using repeated measures ANOVA with: treatment (varenicline/placebo), cue (cigarette/neutral), time (post-cue/5 mins/10 min), (varenicline/placebo first), and session (1/2). The treatment x cue type interaction was non-significant for craving (p = .70) and withdrawal (p = .67). There were significant main effects of treatment on craving [F(1, 36) = 30.1, p < .001] and withdrawal [F(1, 36) = 18.4, p < .001]. Treatment with varenicline vs. placebo attenuated craving to both cigarette (p < .001) and neutral cues (p < .001). Craving scores in response to the cigarette cue were 4.8 ± 2.2 after varenicline and 5.2 ± 2.1 after placebo. Neutral cue craving scores (significantly lower: p < .001) were 3.4 ± 2.0 during varenicline and 4.5 ± 2.0 during placebo. There was a similar effect of treatment on withdrawal scores: cigarette cue (varenicline 5.1 ± 3.0, placebo 7.4 ± 3.0); neutral cue (varenicline 5.3 ± 3.0, placebo 7.3 ± 2.9). This result indicates that varenicline does not influence cigarette cue-provoked craving in abstinent smokers but may instead attenuate tonic levels of craving and acute withdrawal.

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PA11-4  EFFICACY AND SAFETY OF ADDING A NICOTINE PATCH TO RIMONABANT FOR SMOKING CESSATION: A RANDOMIZED CONTROLLED TRIAL

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Background: Combining drugs that have smoking cessation efficacy but different mechanisms of action might improve outcomes. Both nicotine patch and rimonabant, a cannabinoid type-1 receptor antagonist, have shown smoking cessation efficacy. Rimonabant reduces post-cessation weight gain. Combining these drugs might improve cessation rates and maintain nicotine patch weight-bias effects.

Methods: The efficacy and safety of adding nicotine patch to rimonabant for smoking cessation was tested in 735 smokers enrolled in a 14-site randomized double-blind placebo-controlled trial. Rimonabant (20 mg daily) was given open-label for 9 weeks. After 1 wk, the 735 subjects still taking drug were randomly assigned to nicotine patch (R+NRT, n=369) or placebo (R+PCB, n=366) for 10 weeks (21 mg, 8 wk; 14 mg, 1 wk; 7 mg, 1 wk). Subjects had brief cessation counseling at each visit. 533 (71.7%) subjects completed the 26-week study. The primary endpoint was CO-validated abstinent status from direct and in-direct evidence, suggests varenicline to have a superior mechanism of action. We evaluated the effect of varenicline on cue-provoked craving and acute withdrawal using a randomized, double-blind, placebo-controlled, cross-over design.

Conclusion: Adding a nicotine patch to rimonabant was well tolerated, improved smoking cessation rates, and reduced body weight. Varenicline did not alter the effect of rimonabant alone on weight gain. The cessation benefit persisted at 26 wk follow-up.

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PA11-5  ALCOHOL HISTORY AND SMOKING CESSATION IN NICOTINE REPLACEMENT THERAPY, BUPROPION AND VARENICLINE TRIALS: A REVIEW

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There is strong evidence of co-morbidity between cigarette smoking and alcohol problems. From a clinical perspective, the most recent clinical guidelines for smoking cessation advocate that smokers attempting to quit smoking make an effort to avoid drinking. Smokers with alcohol problems are often excluded from smoking cessation trials though. For this reason, it is unclear to what extent published findings apply to smokers with co-morbid alcohol problems. Given the synergy between alcohol and cigarette smoking, alcohol status may have an impact on smoking cessation and vice-versa. To address these issues, we set out to conduct a literature review of published reports of smoking cessation trials making use of FDA-approved pharmacotherapies for smoking cessation. The goals of this review were to determine the following: (1) The generalizability of findings in the NRT, bupropion, and varenicline literatures to smokers with current or past alcohol use disorders; (2) The extent to which alcohol use status affects smoking cessation; and (3) The likelihood that smoking cessation will result in a reduction or increase in alcohol use. The review included 209 published reports from 149 trials. Overall, alcohol-related exclusion criteria were common (42% of trials), especially in bupropion (68%) and varenicline trials (100%). Eleven trials reported on the relationship between alcohol status and likelihood of smoking cessation. The limited data suggest that smokers with a past history of alcohol problems were not at a disadvantage in quitting smoking although contrary findings exist. Findings related to the impact of smoking cessation on alcohol use are even more limited. The available data suggest that smokers with only brief periods of alcohol abstinence may be less successful at smoking cessation and may be susceptible to alcohol relapse. Again, data regarding relationships between smoking cessation and alcohol use from high quality pharmacotherapy trials are limited and further research is needed.

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PA11-6  EFFECTIVENESS OF SMOKING CESSATION THERAPIES: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Several pharmacological interventions now exist to aid smokers in cessation. These include Nicotine Replacement Therapy [NRT], bupropion, and varenicline. We aimed to assess their relative efficacy in smoking cessation by conducting a systematic review and meta-analysis.

Methods: We performed a systematic search of 10 databases independently, in duplicate. Using a random effects meta-analysis and meta-regression technique, we examined the primary outcome of smoking cessation at 1 year and at 3 months. We compared treatment effects across interventions using head-to-head trials and when these did not exist, we calculated in-direct comparisons.

Results: We identified 70 trials of NRT versus control at 1 year. Odds Ratio [OR] 1.71, 95% Confidence Interval [CI] 1.59-1.88, P=0.0001, I^2=28.5%). This effect was consistent when examining all placebo-controlled trials (49 trials, OR 1.78, 95% CI 1.60-1.99). NRT gum versus all controls (33 trials, OR 1.60, 95% CI, 1.37-1.86) or patch versus all controls (23 trials, OR 1.63, 95% CI, 1.41-1.89). Bupropion trials were superior to controls at 1 year (OR 2.37, 95% CI 1.92-2.99) and at 3 months (10 trials, OR 2.14, 95% CI 1.47-2.69). Two trials evaluated the superiority of bupropion versus NRT at 1 year and found a pooled OR of 1.14 (95% CI, 0.20-6.42). Varenicline was superior to placebo at 1 year (OR 2.80, 95% CI, 2.04-3.83, P=0.0001, I^2=0%). This effect was consistent with short-term cessation effects (2 trials, OR 3.65, 95% CI, 2.84-4.68). Two trials evaluated the effectiveness of varenicline versus bupropion at 1 year (OR 1.59, 95% CI, 1.20-2.09). This was also the case in the short-term outcomes (OR 1.86, 95% CI, 1.48-2.32). Using indirect comparisons, we found that varenicline was superior (3 trials) compared to placebo controls (OR 1.57, 95% CI 1.39-1.82, test for difference P=0.007). Adverse events were not systematically different across studies. Interpretation: NRT, bupropion and varenicline are efficacious smoking cessation therapies. The current evidence, from direct and in-direct evidence, suggests varenicline to have a superior therapeutic effect other than interventions.

Canadian Institutes of Health Research; Pfizer UK; Ontario HIV Treatment Network.

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PA12-1 PSYCHOSOCIAL PREDICTORS OF SMOKING TRAJECTORIES FROM ADOLESCENCE TO YOUNG ADULTHOOD
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Background: While the prevalence of smoking among high school students had been declining since the late 1990s, new data indicate the rate of decline has slowed, raising concern that these downward trends may not continue. Effective smoking prevention and cessation programs can benefit from understanding (1) patterns of persistence and change (e.g., escalation or remission) in smoking behavior over time that may represent different etiological processes, and (2) individual factors associated with the developmental course of smoking.

Objective: The purpose of this study was to identify distinct developmental trajectories of cigarette use spanning adolescence and early adulthood, using empirically derived psychosocial risk factors for smoking to predict the probability of trajectory group membership.

Design: Semi-parametric group-based modeling was used to estimate distinct smoking trajectories and their related predictors.

Participants: Data from the Add Health study were used in this analysis.

Findings: Six smoking trajectories were identified representing nonsmokers, experimenters, stable light smokers, decliners, late escalators, and stable smokers. Baseline measures of deviant behavior, alcohol and drug use were associated with the probability of membership in all five smoking trajectory groups compared with nonsmokers. Baseline depression scores predicted the probability of following the late escalator or stable smoker trajectory. Being male was associated with the late escalator trajectory. The probability of membership in the stable light smoker, decliner, late escalator and stable smoker trajectories was associated with being White. Lower mother’s education was associated with the probability of membership in the decliner and stable smoker trajectories.

Conclusion: The results suggest there are different pathways for smoking associated with specific patterns of risk. The results may guide development of interventions tailored to subgroups within the broader population of smokers.

Data analyses were supported by grant K01 DA15454-01 from the National Institute of Drug Abuse (Dierker) and an Investigator Award from the Patrick & Catherine Weldon Donaghue Medical Research Foundation (Dierker). It uses data from the ADD Health project, a program project designed by J. Richard Udry (PI) and funded by grant P01 HD31921 from the National Institute of Child Health and Human Development to the Carolina Population Center, University of North Carolina at Chapel Hill, with cooperative funding from 17 other agencies.

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PA12-2 SMOKING INITIATION IN YOUNG ADULTHOOD: HOW LATE INITIATORS DIFFER FROM EARLIER INITIATORS
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Objective: Most smoking initiation occurs in adolescence, but young adults remain at risk for initiating smoking. To determine what social influences may precipitate smoking initiation, we compared students who began smoking in high school to those who began smoking in university. Perceptions of tobacco and alcohol use among peers; relationships with peers; school connectedness; and own alcohol and tobacco use were examined.

Methods: From the 19 4-year universities in Ontario, Canada, a representative sample of 11 was selected. All full-time students at those institutions received email invitations to complete an anonymous online questionnaire; 7,605 university students did so. Conservatively assuming all eligible students received the invitation, the response rate is 5%. Screening criteria (for age) and non-systematic missing data resulted in a final sample of 6,021 participants, 18-24 years old.

Results: 20% of participants had smoked 100 whole cigarettes in their lives, and 21% were current smokers. Among ever-smokers, 70.2% began smoking in high school (earlier initiators) and 29.8% began smoking in university (late initiators). Late initiators were less likely than early initiators to be current daily smokers (40% vs. 39%, p<0.01), but more of their university peers smoked (33% vs. 29%, p<0.01). Late initiators also perceived higher prevalence of alcohol use among their university peers (84% vs. 81%, p<0.01), and felt more connected (p<0.01) to their campus than did early initiators. There were no between-group differences for high school connectedness, current alcohol use (9% drank in the past month); where they lived; whether they lived with smokers (46% do); whether they felt pressured by their friends to smoke.

Conclusion: Late initiation of smoking may be associated with perceiving smoking — alcohol use — as normative behaviors on campus, and feeling connected to that campus culture. Policies that limit the visibility and normative quality of smoking on campus may help reduce the number of young adult students who start smoking.

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PA12-3 TEMPORAL ASSOCIATIONS OF CIGARETTE SMOKING WITH SOCIAL INFLUENCES, ACADEMIC PERFORMANCE, AND DELINQUENCY: A FOUR-WAVE LONGITUDINAL STUDY FROM AGE 13 TO 23
Joan S. Tucker, Ph.D.*, Felipe Martinez, Ph.D., Phyllis L. Ecklson, Ph.D., and Maria Orlando Edelen, Ph.D., RAND Corporation

Temporal associations of cigarette smoking with pro-smoking social influences, academic performance, and delinquency were investigated in a sample of 6,402 participants in the RAND Adolescent/Young Adult Panel Study. This study extends previous research by (1) estimating associations with smoking net of significant covariates, autoregressive effects, and shared variance among the examined psychosocial factors, thus heightening confidence that significant associations reflect the actual effects of these psychosocial factors on youth smoking (or vice versa); and (2) using a large and diverse cohort of youth who were assessed repeatedly from age 13 to 23, allowing the opportunity to examine whether associations of psychosocial factors with smoking are unidirectional or reciprocal, vary as a function of developmental period, and significantly differ for boys and girls. Pro-smoking family influences (household smoking, parental approval of smoking) were risk factors for future smoking throughout adolescence, and may partly operate indirectly through the adolescent’s exposure to pro-smoking peers. Not until emerging adulthood did peer smoking replace family influences as the dominant social risk factor. There were reciprocal associations of youth smoking with parental approval, peer smoking, and poor grades (but not delinquency), with smoking emerging as a stronger antecedent than consequence of these psychosocial factors. Few gender differences were found. Results from this study point to the importance of paying greater attention to familial influences on smoking early on and retaining this focus throughout middle school and high school. Findings also highlight the need to focus more attention on factors of peer influence during emerging adulthood, and to better understand the mechanisms through which they promote smoking during this important transitional period. Finally, the lack of gender differences suggests that efforts to develop gender-specific substance abuse intervention for adolescents are unlikely to profit from differentiating the attention given to parental and peer influences, deviance or academic performance by gender.

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PA12-4 DOES PERSONALITY MODIFY THE INFLUENCE OF CLOSE FRIENDS’ SMOKING ON ADOLESCENTS’ SMOKING TRANSITIONS?: A LONGITUDINAL STUDY
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Close friends’ smoking influences three adolescents smoking transitions: never to trying, trying to monthly, and monthly to daily smoking (Bricker et al., 2006). We hypothesize that adolescents with certain behavioral tendencies (i.e., personality traits) might be more influenced by friends’ smoking behavior. For example, we hypothesize that adolescents who prefer to do what their friends want them to do (i.e., “compliance with friends”) would be more influenced by their smoking friends to take up smoking in order to obtain a sense of belonging. We tested such hypotheses in a Washington State population-based cohort of 5,817 adolescents. For each adolescent, the number of friends who smoked was reported by the adolescent in 5th, 7th, and 9th grade; data on behavioral tendencies were self-reported in 5th, 7th, and 9th grade. Adolescents self-reported smoking at 5th, 7th, 9th, and 12th grades. Smoking transitions occurred any time up to 12th grade and were also defined in the intervals of 5th to 7th, 7th to 9th, 9 to 12th grade. The behavioral tendencies we examined were: (1) nonconformity; (2) nonconformity with parents; (3) compliance with friends; (4) thrill seeking; and (5) low achievement motivation. Results showed significant evidence of behavioral tendencies that moderated the influence of smoking transitions. For example, compliance with friends, as reported in 5th grade, enhanced the influence of close friends’ smoking for the transition to trying smoking occurring any time up to 12th grade (p < .05). Results provide partial support of our hypotheses about which behavioral tendencies might lead adolescents to try influenced by their close friends’ smoking behavior. Implications for theory and for identifying and intervening on adolescents at high risk for trying smoking will be discussed.

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PA12-5

EFFECTS OF INATTENTIVE AND HYPERACTIVE-IMPULSIVE SYMPTOMS ON DEVELOPMENT OF NICOTINE DEPENDENCE FROM MID-ADOLESCENCE TO YOUNG ADULTHOOD

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The relationship between Attention-Deficit/Hyperactivity Disorder (ADHD) and smoking is well documented. However, it is unclear whether ADHD symptoms affect progression in Nicotine Dependence (ND) from adolescence to young adulthood. The objective of this study was to evaluate the effect of ADHD symptoms on progression in ND, and whether this effect differed by ADHD symptoms (inattentive or hyperactive-impulsive), and developmental period (adolescence or young adulthood). We hypothesized that ADHD symptoms (assessed in the fall of 10th grade) would be related to a higher level of ND at baseline and a faster rate of acceleration in nicotine dependence across adolescence (ages 15 to 18) and young adulthood (ages 18 to 20). Participants were adolescents (n=625) who smoked at least one whole cigarette in their lifetime. Participants are members of a prospective cohort study (age 14-22 years old) evaluating the bio-behavioral predictors of smoking adoption. Data were analyzed with a two-piece latent growth curve model (LGM), modeling separate developmental trends for the periods of adolescence and post adolescence. The two-piece LGM fit the data well, chi square=43.57, p=.2832, CFI=1.00, RMSEA=.01, SRMR=.02. Although ADHD symptoms were unrelated to nicotine dependence levels at baseline, ADHD inattention symptoms were associated with ND acceleration from age 15 to 18 years of age, but a slowing of acceleration from age 18 to 20, whereas ADHD H-I symptoms were associated with ND acceleration from age 18 to 23. The results suggest that the effects of ADHD symptoms on nicotine dependence differ by symptom type, and whether the effect is assessed during mid adolescence or young adulthood. This is the first study to our knowledge to assess the effects of ADHD symptoms on ND prospectively in a community sample of adolescents, and to assess how these symptoms impact adolescents during the transition into young adulthood.

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PA12-6

CIGARETTE SMOKING AND ALCOHOL USE AS PREDICTORS OF MARIJUANA USE IN ADOLESCENCE AND YOUNG ADULTHOOD

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Many studies have been conducted on the associations between licit drug use and marijuana use in adolescence and young adulthood. Very few studies, however, have examined cigarette and alcohol as separate variables to assess whether there is a direct link between these licit drugs and marijuana use. The present study investigated the relationships between alcohol, cigarette, and marijuana use in adolescence and young adulthood using data from the 2002 and 2003 National Surveys on Drug Use and Health. The current study investigated: (1) whether the correlations between alcohol use and marijuana use differ from those between cigarette use and marijuana use; (2) whether each licit drug is a significant, independent predictor of marijuana use after controlling for a comparable measure of the other licit drug; and (3) whether these relationships differ depending on how “use” is operationally defined. This is the first known study that has assessed multiple levels and definitions of use of alcohol, cigarettes, and marijuana to determine if the licit drugs differ in their associations and predictive values of marijuana use using a nationally representative sample. Overall, cigarette use was a stronger predictor of marijuana use than was alcohol use, particularly when assessing more frequent and higher rates of use; however, it was found that the differences in predictive values of alcohol and cigarette use on marijuana use differed as a function of how use was defined. In addition, cigarette use was the only licit drug predictor of marijuana use than was smokeless tobacco use, providing evidence that the relationship between cigarettes and marijuana use may be due, in part, to similar modes of ingestion. The methodological and clinical implications of the findings are discussed.

No funding. This study was completed while the first author was at Purdue University.

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PA4-6

EPIDEMIOLOGICAL ASSOCIATION OF SNUFF USE WITH CHRONIC BRONCHITIS IN BLACK SOUTH AFRICAN WOMEN

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CONTEXT: About 80% of Snuff or Smokeless tobacco use in South Africa—mainly by black African women - is through nasal (tidal) application. OBJECTIVE: To determine the association between snuff use and chronic bronchitis among South African black women.

DESIGN AND SETTING: Logistic regression analysis was carried out on a nationally representative sample of black women 25+ yrs who participated in the first and only South African Demographic Health Survey conducted in 1998 (n=4,464). Data on tobacco use patterns and medical history, among others, was obtained through trained interviewers. Peak expiratory flow rates (PEFR) were measured. Analysis took account of the complex sample design and controlled for socio-demographic factors and other known risk factors for chronic bronchitis, including history of tuberculosis (TB) and exposure to domestic smoky fuels, occupational exposure to dust or fumes.

MAIN OUTCOME MEASURE: Chronic bronchitis defined as chronic productive cough. RESULTS: Mean (±SD) age of participants was 46 (±15.6) years. The prevalence of current snuff use, current and former smokers was 16.1%, 6.5% and 1.6% respectively. Of the respondents, 3.2% provided positive symptoms for chronic bronchitis. Compared to non-snuffers, snuff users were more likely to present with chronic bronchitis (5.3% vs. 2.8%; p<0.01) and with a lower PEFR (275ml vs. 293ml; p<0.01). A comparison between snuff use and chronic bronchitis, including history of tuberculosis (TB) and exposure to domestic smoky fuels, occupational exposure to dust or fumes was made.

CONCLUSIONS: This study demonstrates for the first time an association between snuff use and chronic bronchitis, including history of tuberculosis (TB) and exposure to domestic smoky fuels, occupational exposure to dust or fumes. Although ADHD symptoms were unrelated to nicotine dependence levels at baseline, ADHD inattention symptoms were associated with ND acceleration from age 15 to 18 years of age, but a slowing of acceleration from age 18 to 20, whereas ADHD H-I symptoms were associated with ND acceleration from age 18 to 23. The results suggest that the effects of ADHD symptoms on nicotine dependence differ by symptom type, and whether the effect is assessed during mid adolescence or young adulthood. This is the first study to our knowledge to assess the effects of ADHD symptoms on ND prospectively in a community sample of adolescents, and to assess how these symptoms impact adolescents during the transition into young adulthood.

This study was supported by the National Department of Health.

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PA7-5

IMPACT OF TOBACCO-RELATED PRESS COVERAGE ON SMOKING ATTITUDES AND BEHAVIORS OF AMERICAN YOUTH

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Geographic variation in youth smoking prevalence lends support to the notion that there are community level factors to which youth are exposed that put them at higher risk for smoking. The purpose of this study was to explore the role of one particular community level factor, namely, news coverage on tobacco issues, has been studied among adolescents. Although youth do not commonly read newspapers, there may be indirect effects of the media through the ability of news coverage to set the agenda for and reflect discussions with the community about tobacco. In this study, we related the volume and nature of press coverage about tobacco issues in 786 American communities to smoking attitudes and behaviors among 134,416 youth who participated in the nationally representative school-based Monitoring the Future (MTF) surveys from 2001 to 2003. We weighted the volume of articles by the circulation rates of the newspapers in each MTF community, given that articles in higher circulation newspapers would have gained greater community exposure. Over the five-month period leading up to the date of the survey administration, community members had the opportunity to read an average of 14 articles about tobacco issues each month, and this ranged from 0 to 87 articles per month in different communities. Coverage generally focused on events that supported tobacco control objectives, rather than reporting on setbacks. Although this varied by community. After adjusting for tobacco price, strength of smoke-free laws, year, region, and individual level covariates, a higher volume of tobacco-related news coverage was related to a greater likelihood of youth perceiving smoking as harmful, a lower likelihood of having smoked in the past 30 days and less progression to regular smoking. We report additional findings for youth smoking by exposure to coverage that either supports tobacco control objectives or results on setbacks. The volume of press coverage about tobacco issues is independently related to youth smoking outcomes. These findings suggest that media advocacy may make a contribution to reducing smoking among American youth.

This study was supported by the National Cancer Institute State and Community Tobacco Control Initiative, the Robert Wood Johnson Foundation, and the National Institute on Drug Abuse.

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Polymorphisms in the Dopamine Transporter Gene (DAT1): Influences on Cognition, Behaviour and Risk of Relapse


Nicotine, like many recreational substances, exerts its reinforcing effects via enhancing mesolimbic dopamine. There is increasing evidence however of hypofunctioning in this neurotransmitter system as well as drug-induced plastic changes at the synapse in regular smokers. Since 50% of the factors accountable for dependence appear to be genetic, polymorphisms in dopaminergic genes are logical candidates influencing smoking behaviour. The 9-repeat of the dopamine transporter gene (DAT1) has previously been associated with a protective effect against smoking, greater likelihood of cessation and lower novelty seeking. This study aimed to explore DAT1 polymorphisms and their influence on smoking behaviour, personality, reward responsiveness and relapse. 188 smokers were genotyped and assessed on a number of cognitive and behavioural measures including the Fagerstrom Test for Nicotine Dependence, a card-sorting task measuring reward responsivity (CARROT), the Antisaccade Task measuring response inhibition and Zuckerman's Sensation Seeking Scale. 143 participants then commenced a quit attempt, and their success in remaining abstinent to 7 days was confirmed via salivary cotinine. Individuals with the 10 allele were significantly less dependent on nicotine, had lower sensation seeking scores and demonstrated enhanced responsiveness to reward on the CARROT (trend). There was no difference between genotypes on the Antisaccade Task. 76 participants (53%) succeeded in abstaining over 7 days; the probability of relapse was greater among individuals with the 9-repeat allele, although this did not reach statistical significance. Tentative conclusions from these preliminary data suggest, contrary to previous reports, a tendency towards nicotine dependence in individuals with the 9 allele genotype. By contrast, the lower sensation seeking scores, trend for enhanced reward responsiveness and lower relapse rates in individuals with the 10-repeat, are suggestive of a protective role for the 10 allele.

National Institute of Drug Abuse (NIDA)

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**NEW INVESTIGATORS**

**NI1-1**  
**ADOLESCENT RECEPTIVITY TO TOBACCO MARKETING ACROSS RACE/ETHNIC GROUPS IN CALIFORNIA**  
Joshua H. West, M.P.H., San Diego State Univ./Univ. of California; Dennis R. Trinidad, Ph.D., M.P.H., John P. Pierce, Ph.D., Univ. of California, San Diego; Romina Romero, M.P.H.*, San Diego State Univ./Univ. of California, San Diego

Adolescent smoking rates among African Americans (AA) and Asian Americans/Pacific Islanders (API) are lower than those of Hispanics/Latinos (HL) and non-Hispanic whites (WH). These lower rates may be related to less receptivity towards tobacco marketing practices. There have been no recent reports based on representative population data examining tobacco marketing receptivity across race/ethnic groups, particularly across levels of the smoking uptake continuum. We examined data from 5857 adolescents (66.6% response rate) from the population-based, random-digit-dialed 2002 California Tobacco Survey (CTS) for race/ethnic differences in tobacco marketing receptivity. An index measure of overall receptivity was based on three variables: reporting the name brand of a favorite tobacco advertisement, willingness to use or own a tobacco promotional item, and reporting seeing a tobacco logo on television during a sporting event. Respondents were classified as smoking a smoking continuum as: committed never smoker (CNS), susceptible never smoker (SNS), and any smoking. For CNS adolescents and those who had already experimented with smoking, smoking rates were performed to test for the association between receptivity and race/ethnicity by smoking status (CNS, SNS, any smoking). AA (OR=0.77; 95% CI: 0.61-0.96) and API (OR=0.80; 95% CI: 0.66-0.97) were less likely than WH adolescents to be receptive to tobacco marketing after controlling for the aforementioned factors. For SNS, AA (OR=0.67; 95% CI: 0.47-0.93) and API (OR=0.72; 95% CI: 0.54-0.95) were less likely than WH adolescents to be receptive. There were no differences by ethnicity for CNS adolescents and those who had already experimented with smoking. There may be some features of the AA and API culture that could be protective against receptivity to tobacco marketing, particularly for those who are SNS. Future studies examining exposure to tobacco marketing and receptivity among API and AAs as they transition into independent living are needed to examine whether low receptivity carries on during the age when the majority of AIPs and AAs initiate smoking.

**NI1-2**  
**EFFECTS OF NICOTINE EXPOSURE FOLLOWING BRIEF ABSTINENCE: AN EXAMINATION OF HUMAN DRUG PRIMING EFFECTS**  
Ryan Vandrey, Ph.D.*, Maxine L. Stitzer, Ph.D., Johns Hopkins University; Eric C. Donny, Ph.D., University of Pittsburgh

Pre-clinical research suggests a critical role of drug cue exposure in precipitating relapse to drug use. This study extends previous human laboratory research by examining exposure to nicotine via nasal spray or inhaled smoke during a period of sustained abstinence from smoking. Study completers (20 male, 25 female) were 39 years old (SD=12 years), smoked 19 (SD=8) cigarettes per day, and were not seeking treatment. After 4 days of verified abstinence, participants were randomly assigned to receive either 5 doses of placebo nasal spray, 5 doses (1mg each) of nicotine nasal spray, or to smoke five cigarettes of their usual brand at 30-min intervals in the laboratory. Subjective and physiological measures were collected at baseline and following each drug exposure, then smoking behavior was monitored for 6 days. Participants earned $80 for abstaining the first 4 days and then $9, $6, and $3 per day during subsequent 2-day blocks. Repeated measures ANOVA’s (group x time) indicated participants exposed to cigarettes reported greater reductions in tobacco withdrawal and cigarette craving compared with participants receiving the placebo spray. Ratings by participants exposed to nicotine spray were intermediate on these items. Participants in the cigarette and nicotine spray groups had higher ratings on the item “buzzed” compared with placebo. Tolerance to this effect was observed across exposures in the cigarette group, but not in the nicotine spray group. Interestingly, there were no group differences on drug liking or confidence in ability to remain abstinent following drug exposure. By the end of the study, 53%, 36% and 25% of those exposed to placebo spray, nicotine spray, and cigarettes respectively remained abstinent. These results are consistent with animal research on drug cue exposure suggesting that similar principles may operate in humans, where brief smoking lapses during a quit attempt are associated with accelerated time to relapse. That subjective effects and relapse rates were greater in the cigarette group compared with the nicotine spray group further demonstrates the importance of behavioral smoking cues in the reinforcing effects of cigarettes.

**NI1-3**  
**ABSTINENCE-SPECIFIC SOCIAL SUPPORT FOR SMOKING CESSION: A LONGITUDINAL ANALYSIS**  
Dawn Lawhon, Ph.D.*, Gary L. Humfleet, Ph.D., Sharon M. Hall, Ph.D., Victor I. Reus, M.D., Ricardo F. Muñoz, Ph.D., University of California, San Francisco Treatment Research Center

Research shows that abstinence-specific social support during the active phase of quitting predicts short- and long-term smoking cessation treatment outcome. The present study replicates this finding, and extends it by describing changes over time in the provision of abstinence-specific support and examining how support provided during middle and later phases of the quitting process may be associated with treatment outcome. This secondary analysis of combined data from three randomized clinical trials of smoking cessation treatment (N=739) focuses on multiple administrations of the Partner Interaction Questionnaire (PIQ, Cohen & Lichtenstein, 1990), a measure of smoking-related social support. Longitudinal analyses found that negative support held constant over time, and was useful at all follow-up points for differentiating between these outcome groups: (1) those who never attempted smoking; (2) those who quit and relapsed; and (3) those who maintained abstinence throughout the study. In contrast, positive support peaked at week 12, decreasing steadily thereafter. There were no differences between outcome groups in positive support provided after week 12. These results suggest that though positive and negative support are both important factors in the early phase of quitting, but it is the continued minimization of negative support that best predicts maintenance of non-smoking. Implications for clinical research and practice are discussed.

**Funding for this work was provided by the National Institute on Drug Abuse (NIDA) through San Francisco Treatment Research Center (PS50 DA-09253), Postdoctoral Training in Drug Abuse Treatment and Services Research (T32 DA-07250), and grants R01 DA-2583 and R01 CA-71378**

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**NI1-2**  
**EFFECTS OF NICOTINE EXPOSURE FOLLOWING BRIEF ABSTINENCE: AN EXAMINATION OF HUMAN DRUG PRIMING EFFECTS**  
Ryan Vandrey, Ph.D.*, Maxine L. Stitzer, Ph.D., Johns Hopkins University; Eric C. Donny, Ph.D., University of Pittsburgh

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**NI1-3**  
**ABSTINENCE-SPECIFIC SOCIAL SUPPORT FOR SMOKING CESSATION: A LONGITUDINAL ANALYSIS**  
Dawn Lawhon, Ph.D.*, Gary L. Humfleet, Ph.D., Sharon M. Hall, Ph.D., Victor I. Reus, M.D., Ricardo F. Muñoz, Ph.D., University of California, San Francisco Treatment Research Center

Research shows that abstinence-specific social support during the active phase of quitting predicts short- and long-term smoking cessation treatment outcome. The present study replicates this finding, and extends it by describing changes over time in the provision of abstinence-specific support and examining how support provided during middle and later phases of the quitting process may be associated with treatment outcome. This secondary analysis of combined data from three randomized clinical trials of smoking cessation treatment (N=739) focuses on multiple administrations of the Partner Interaction Questionnaire (PIQ, Cohen & Lichtenstein, 1990), a measure of smoking-related social support. Longitudinal analyses found that negative support held constant over time, and was useful at all follow-up points for differentiating between these outcome groups: (1) those who never attempted smoking; (2) those who quit and relapsed; and (3) those who maintained abstinence throughout the study. In contrast, positive support peaked at week 12, decreasing steadily thereafter. There were no differences between outcome groups in positive support provided after week 12. These results suggest that though positive and negative support are both important factors in the early phase of quitting, but it is the continued minimization of negative support that best predicts maintenance of non-smoking. Implications for clinical research and practice are discussed.

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NI1-4

BREAKING DOWN THE BARRIERS TO TREATING TOBACCO AMONG INDIVIDUALS WITH MENTAL ILLNESS

Judith Prochaska, Ph.D., M.P.H.*, Department of Psychiatry, University of California, San Francisco, CA

This year’s recipient of the 2007 Jarvik-Russell Award (formerly the SRNT Young Investigator Award) is Dr. Judith Prochaska. Dr. Prochaska will deliver a 25-minute lecture on her emerging program of research. Dr. Prochaska’s award will be presented to her at the Opening Reception and Awards Ceremony, which will be held on Wednesday, February 21, from 5:30 p.m.-7:00 p.m.
POS1-1

A MAIL-BASED MOUTHWASH COLLECTION STUDY TO OBTAIN DNA FROM A GEOGRAPHICALLY DISPERSSED COHORT OF CURRENT AND FORMER SMOKERS


Objective: To assess the response rate of a study involving collecting DNA through the mail from a cohort of current and former smokers, and to determine the characteristics associated with response.

Methods: The study population included the 4,607 people who participated telephone surveys as part of the Community Intervention Trial for Smoking Cessation between 1988 and 1993, completed follow-up surveys in both 2001 and 2005, and consented to receiving the DNA data collection materials in the mail. Sample collection kits were mailed to the participants in July through October 2005. The kits contained: (a) a personalized cover letter and consent form, (b) a check for US$10, (c) a postage-paid, preaddressed return mailing envelope and leak-proof zip-lock bag for the collection container, and (f) instructions for participants. The all-inclusive cost per sample received was $33.00.

Results: A total of 1,943 usable samples were returned (42%). Smoking behavior was associated with response to the DNA collection effort with former smokers having the highest response rate (48%) and all smokers had a 35% response rate. Those who were white/non-Hispanic race/ethnicity and who were older were more likely to respond. Gender, income, and desire to quit were not associated with response.

Conclusions: DNA samples can be efficiently obtained through the mail for large, population-based genomic studies. Investigators should use information on variability in who responds when planning these studies.

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POS1-2

TOBACCO SMOKE EXPOSURE AND GENETICS: YOUTH AT RISK FOR CARDIOVASCULAR DISEASE

Martha S. Tingen, Ph.D., R.N.*; David A. Ludwig, Ph.D.; Yanbin Dong, Ph.D., M.D.; Haidong Zhu, Ph.D., M.D.; Georgia Prevention Institute (GPI), Medical College of Georgia (MCG); Jeannette O. Andrews, Ph.D., R.N.; Anna Burnett, B.S.; Rachel Barnett, B.S.; School of Nursing, MCG; Debra C. Wallace, Ph.D., R.N.; School of Nursing, Univ. of North Carolina, Greensboro; Frank A. Treiber, Ph.D.; GPI, MCG

Active and passive exposure to tobacco smoke is associated with increased risk of cardiovascular disease (CVD). Whether such relationships are moderated based upon inter-individual variations in genes involved in biotransformation and detoxification reactions of tobacco smoke is unknown. This study investigated potential gene-environment interactions of two genes (GSTM1, GSTT1) and smoke exposure (measured by plasma cotinine) on the development of pre-clinical CVD phenotypes: resting vasoconstrictive tone (ie: total peripheral resistance [TPR]), endothelium dependent arterial dilation (EDAD), and left ventricular mass indexed for body size (LVMI).

Subjects (N=440) were 19.4 ± 3.0 years of age with nearly equal numbers of males, females, African Americans (AAs), and Caucasians; were normotensive, healthy, and had a positive family history of CVD. Genotyping results were classified as either carrier or non-carrier; carrier was defined by the homozygote of rare null allele for both genes. The gene by environment interaction was tested by evaluating the cotinine by carrier status interaction for the dependent CVD measures (General Linear Model). Further analyses evaluated possible modulating influences of ethnicity and gender. Results showed a significant ethnicity by carrier status (GSTT1) by cotinine (log transformed) interaction for TPR (F[1, 340]=5.51, P=0.0195). The interaction indicated a positive relationship between cotinine and carrier status for resting TPR among AAs (r=0.31, P=0.026). No such relationship was exhibited with other ethnicity by carrier status groups (r's<0.14, P's>0.1831). Additional support for this finding, while not statistically significant, was seen with decreased EDAD associated with cotinine among only AA carriers of the GSTT1 polymorphism (r=-0.22). There were no other main effects or gene by environment interactions for either gene for EDAD or LVMI. Blood pressure control problems in AAs tend to be related to vasoconstrictive regulation difficulties. Study results suggest that for AAs, smoke exposure may be particularly harmful in carriers of the GSTT1 gene, and may contribute to possible earlier onset of CVD.

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POS1-3

A NOVEL CYP2A6 GENETIC VARIANT 594G>C (VAL110LEU) IS ASSOCIATED WITH LOWER CYP2A6 ACTIVITY

Nael Al Koudsi*, Jill C. Mwenifumbo, Man Ki Ho, Ewa Hoffmann, M.Sc., Edward M. Sellers, M.D., Rachel F. Tyndale, Ph.D., Centre for Addiction and Mental Health, University of Toronto, Department of Pharmacology

In humans, the majority of nicotine (~80%) is inactivated to cotinine (COT) by the hepatic enzyme CYP2A6. In addition, CYP2A6 exclusively (~100%) metabolizes cotinine to trans-3-hydroxycotinine (3HC), making the 3HC/COT ratio a reliable indicator of CYP2A6 activity. Our aim was to investigate the functional impact of a novel uncharacterized variant (594G>C) on in vivo CYP2A6 activity. The variant occurs predominantly among African Americans and results in an amino acid substitution (Val110Leu) of CYP2A6 activity. Our aim was to investigate the functional impact of a novel uncharacterized variant (594G>C) on in vivo CYP2A6 activity. The variant occurs predominantly among African Americans and results in an amino acid substitution (Val110Leu)

A genotyping assay was developed and the presence of the variant confirmed. Genotyping analyses also revealed an effect of gender and smoking status on the 3HC/COT ratio. In this study, we looked at African American (AA) and Caucasian (CA) subjects of the Metro Atlanta Cohort. Results showed that the variant was associated with a lower 3HC/COT ratio in AA women (r=0.19, P=0.051) and that the variant was not associated with a lower 3HC/COT ratio in CA

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SRNT  ◆ Poster Session 1

POS1-4  CHARACTERIZATION OF CYP2A6 AND CYP2B6 GENETIC VARIANTS IN A MEXICAN-AMERICAN POPULATION
Man Ki Ho, Hon B.Sc.*, Rachel F. Tyndale, Ph.D., University of Toronto, Ontario, Canada; Margaret R. Spitz, M.D., Melissa Bondy, Ph.D., Anna Wilkinson, Ph.D., The University of M.D. Anderson Cancer Center, Houston, Texas

Hispanics are an understudied and poorly represented group in health research despite their substantial and growing numbers in the United States. Specifically, Hispanics have unique smoking patterns; compared to non-Hispanic whites, they tend to have lower smoking prevalence, smoke fewer cigarettes per day and have a lower risk of lung cancer. Genetic variations in human CYP2A6, encoding the enzyme that converts most of nicotine (~90%) to its inactive metabolite cotinine, alter nicotine metabolism and thus smoking behaviors. Genetic variations in CYP2B6 have also been implicated in smoking behaviors, with the CYP2B6-6 allele associated with increased proportion to nicotine dependence in adolescents and lower abstinence rates. The objective of this study was to characterize the genetic variation in CYP2A6 and CYP2B6 in a Hispanic population. Male subjects (n = 200) recruited from a longitudinal Mexican-American cohort established in the Houston metropolitan area were selected. Current smokers (n = 100) and former smokers (n = 100) who have maintained abstinence for at least one year were selected and stratified by smoking duration (10-25 years or >25 years). Using a two-step allele-specific genotyping assay, the allele frequencies were found at 2.5% (95% confidence interval 1.0 - 4.0%) for CYP2A6*, 0.3% (0.7%) for CYP2A6*, 10.5% (7.5 - 13.5%) for CYP2A6*9 and 2.8% (1.1 - 4.4%) for CYP2A6*12, which are similar to previously reported values in non-Hispanic whites. The CYP2A6*7 allele, which occurs mainly in Asians, was not detected although CYP2A6*17, which occurs mainly in African-Americans, was found at an allele frequency of 1.5% (0.3 - 2.7%). CYP2B6*6 was found at an allele frequency of 31.3% (26.7 - 35.8%) compared to previously reported values of 25% in non-Hispanic whites, 30% in African-Americans, and 15% in Asians. Thus, the genetic variation in CYP2A6 and CYP2B6 in this Mexican-American population is similar to non-Hispanic whites, with some suggestion of African-American ancestry. Future analyses will be done to determine whether CYP2A6 and CYP2B6 genetic variations are associated with smoking status, smoking duration, and cigarette consumption.

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POS1-5  CONTRASTING IN VIVO AND IN VITRO METABOLISM OF NICOTINE AND COTININE IN DBA2 AND C57BL/6 MICE
Eric C. K. Sui, M.Sc.*, Rachel F. Tyndale, Ph.D., The Centre for Addiction and Mental Health, The Department of Pharmacology, University of Toronto, ON, Canada

DBA2 and C57Bl/6, two mouse strains commonly used in nicotine studies, differ in pharmacological responses to nicotine. The nicotine metabolizing enzyme CYP2A5 is genetically variable between these mice differing in amino acid sequence and metabolism of coumarin, a CYP2A5 substrate. Therefore we investigated if nicotine and cotinine metabolism, in vitro and in vivo, also differ. Nicotine was metabolized to cotinine in vitro by two enzymatic sites with the high-affinity sites exhibiting similar kinetic parameters (Km: 10.7+/-4.8 vs. 11.4+/-3.6 uM; Vmax: 0.58+/-0.18 vs. 0.50+/-0.07 nmol/min/mg, for DBA2 and C57Bl/6, respectively). In vivo, the elimination half-lives of nicotine (1 mg/kg, s.c.) were similar between DBA2 and C57Bl/6 mice (8.6+/-0.4 vs. 9.2+/-1.6 min, respectively); however, cotinine levels were much higher in the DBA2. The putative cotinine metabolite 3-hydroxycotinine in mice was confirmed by LC/MS/MS and inhibitory antibodies demonstrated that both the metabolism of nicotine to cotinine and cotinine to 3-hydroxycotinine were mediated by CYP2A5. The in vivo elimination half-life of cotinine (1 mg/kg, s.c.) was significantly slower in the DBA2 mice compared to the C57Bl/6 mice (50.2+/-4.7 vs. 37.5+/-9.6 min, respectively, p<0.05). The in vitro metabolism of cotinine was also less efficient for DBA2 then C57Bl/6 mice (Km: 51.0+/-15.6 vs. 9.5+/-2.1 uM, p<0.05; Vmax: 0.10+/-0.01 vs. 0.04+/-0.01 nmol/min/mg, p<0.05, respectively). Together this shows genetic differences in Cyp2a5 contribute to similar nicotine but different cotinine metabolism; such variation may confound interpretation of nicotine pharmacological studies and studies utilizing cotinine as a biomarker.

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POS1-6  REACTIVITY OF ONCE-DAILY MONITORING OF CIGARETTES AND INTENTIONS TO CHANGE
Erica N. Peters*, John R. Hughes, Shelly Naud

Recording each cigarette smoked decreases smoking. It is not clear whether less intensive monitoring (i.e., daily) or whether daily monitoring of intentions to change smoking is reactive. 70 cigarette smokers not trying to quit participated in a 28-day non-treatment, natural history study. The first 35 enrolled participants comprised the monitored group (MG) and telephoned our laboratory daily to report how many cigarettes they smoked and their intentions to stop, reduce or not change their smoking the following day. The second 35 participants comprised the non-monitored group (NMG) and did not make daily calls but instead completed weekly Time-line Follow-back assessments of cigarettes and intentions. We have thus far examined the effects of monitoring on smoking behavior. The two groups did not differ on a) mean cigarettes per day (CPD) (MG=19.0 vs. NMG=22.0); b) variability in CPD; e.g., with-in-subject standard deviation (MG=3.1 vs. NMG=3.7) and coefficient of variation (MG=0.2 vs. NMG=0.2); c) change in CPD across the 28 days of the study; e.g., slope (MG=-0.064 vs. NMG=0.01); d) days abstinent (MG=0.6 vs. NMG=0.06); and e) days reduced CPD by >50% compared to baseline (MG=1.1 vs. NMG=1.3). We will have data on the effects of monitoring on intentions at the time of the meeting. We conclude that daily monitoring of CPD or intentions to change does not show a reactive effect on CPD.

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POS1-7  LONGITUDINAL STUDY OF THE NICOTINE-METABOLITE RATIO IN AD LIBITUM AND REDUCING SMOKERS
Marc Mooney, Ph.D.*, Sharon Murphy, Ph.D., Chap Le, Ph.D., and Dorothy Hatsukami, Ph.D., University of Minnesota

The role of nicotine metabolism in the acquisition and maintenance of nicotine dependence has become clearer. Recently, Benowitz and coworkers showed that the ratio of 3'-trans-hydroxycotinine: cotinine (3-HC:C ratio) can be used as an index of nicotine metabolism. However, little research has been done examining the stability of this ratio. The purpose of the current presentation is to test the stability of the 3-HC:C ratio (sum of conjugated and unconjugated forms) in ad libitum and reducing smokers. Smokers participated in a smoking reduction study where subjects were randomized at a 2:1 ratio to begin a 12-week reduction period (n=101, 5 time points) with nicotine replacement therapy, (with a goal of 75% reduction from baseline), or to a 6-week, waitlist ad lib period (n=46, 4 time points) prior to beginning reduction. At baseline (single observation) when all subjects were smoking ad lib, the 3-HC:C ratio (M HC=11,010, SD=9,100; M C=5,400, SD=3,400; M 3-HC:C ratio=2.55, SD=1.98) was correlated with sex, age, years smoked, CPD, FTND score, Time-to-First-Cigarette, previous quit attempts, and waking at night to smoke. Second, in order to assess the stability of the 3-HC:C ratio, repeated-measures ANCOVA models were computed. The 3-HC:C ratio (bigger scores indicate faster metabolism) was positively correlated with CPD, (r(n=121)=.25, p<.01), and waking to smoke, (r(n=121)=.31, p<.001). In the baseline ad lib-phase, the 3-HC:C ratio remained stable, F(3,109)=1.12, p>.30. During the reduction phase, the 3-HC:C ratio continued to remain stable, F(4, 361)=52, p>.70. In conclusion, the 3-HC:C ratio appears stable in smokers, irrespective of changes in smoking level over time.

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POS1-9  
NEGATIVE AFFECT IN SMOKERS IS ASSOCIATED WITH PREFRONTAL SYSTEM BRAIN METABOLISM IN RESPONSE TO NICOTINE

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Negative affect, suberved in part by changes in prefrontal system brain activity, may increase susceptibility to nicotine and nicotine withdrawal. The aim of the study was to determine whether aspects of negative affect, i.e., depression, hostility, and anxiety, are associated with differences in brain metabolic responses to nicotine and placebo in the prefrontal system. More specifically, this study identified brain regions within the prefrontal system that showed the greatest response to nicotine compared to placebo and were strongly associated with negative affect. Fifteen adult smokers participated in two laboratory sessions to assess brain metabolism with fluoro deoxyglucose Positron Emission Topography (FDG-PET) in response to nicotine and placebo patches during an anger provocation task. Depression, hostility, and anxiety were assessed by the Centers for Epidemiological Studies Depression Scale, the Cook-Medley Hostility Scale, and the Taylor Manifest Anxiety Scale, respectively. Stepwise linear regression models determined which brain regions in the prefrontal system were most reactive to nicotine in relation to negative affect. Results showed that depression was predicted by reduced brain metabolism in the left parietal lobe and increased brain metabolism in the right medial prefrontal cortex (BA 32) in response to nicotine. Hostility was associated with brain metabolism in response to nicotine in the right frontal lobe, left substantia nigra-ventral tegmental area, right uncus, right orbital cortex (BA 11), and right entorhinal cortex (BA 28), left superior frontal gyrus (BA 9), right medial temporal cortex, left thalamus, left DLPCF, BA 46, and left portion of the lateral frontal cortex (BA 30). Anxiety was predicted by increased brain metabolism in response to nicotine in the left hippocampus, right medial prefrontal cortex (BA 32) and insula. These findings reveal the underlying brain circuitry for nicotine and its withdrawal in individuals with negative affect. Reducing negative affect and the associated nicotinic responses within the prefrontal system circuitries may be a tailored smoking cessation strategy. This study was supported by the National Institute on Drug Abuse (T37RC DA07243).

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POS1-10  
REGIONAL CEREBRAL GLUCOSE METABOLISM IN CIGARETTE SMOKERS: EFFECTS OF TREATMENT WITH PRACTICAL GROUP COUNSELING AND BUPROPION HCL


Background: Responses of the brain to cigarette smoking and smoking-related behaviors include relative activation of the prefrontal cortex, ACC, thalamus, and visual system. Effects of treatment for tobacco dependence on metabolism in these brain regions have not been reported previously. We therefore tested the effects of treatment with hypotheses focused on these brain regions.

Method: Forty-four research subjects, who were tobacco-dependent cigarette smokers (>15 cigarettes per day), underwent 18F-fluorodeoxyglucose positron emission tomography scanning before and after 8 to 12 weeks of treatment with either practical group counseling (PGC), bupropion HCL, or matching pill placebo (n = 15, 15, and 14, respectively). Differences between groups in regional metabolism changes from pre- to post-treatment were determined with statistical parametric mapping (SPM2).

Results: Compared with the placebo-treated group, the PGC-treated group had greater decreases in relative metabolism in the right frontal cortex and visual system, and greater increases in the ACC, while the bupropion-treated group had greater decreases in metabolism in the lateral frontal cortex and visual system, and greater increases in the frontal pole. Conclusions: Similarities were found in regional metabolic change from pre- to post-treatment with either PGC or bupropion HCL. These findings indicate that active treatments for tobacco dependence result in similar brain pathway alterations, and that these alterations may be associated with the reduction in smoking behavior found with active treatment.

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POS1-11  
DIFFERENTIAL EFFECTS OF CHRONIC NICOTINE ON EVENT RELATED POTENTIAL COMPONENTS AND EVOKED GAMMA

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Research suggests that individuals with schizophrenia display altered sensory information processing as measured by event related potentials (ERPs) and evoked gamma oscillations, two auditory stimulus-induced components of electrical activity in the brain. Certain neurocognitive deficits and disruptions common in schizophrenia may be altered by smoking, leading to the hypothesis that schizophrenics may engage in heavy smoking behavior to alleviate specific neurocognitive symptoms of the disorder. Although reports in the literature suggest that low doses of chronic nicotine do not affect ERP components, no studies have examined the effects of higher dosages consistent with those required to induce a withdrawal syndrome in mice. This study was conducted to examine the effect of chronic administration of nicotine (24 mg/kg/day) on the P20 and N40 components of the auditory ERP and evoked gamma oscillations, the normal burst of evoked gamma following an auditory stimulus, in mice. Nicotine significantly increased P20 amplitude while also marginally increasing evoked gamma oscillations. Additionally, chronic nicotine significantly decreased amplitude of the N40 component. These results are consistent with reports that acute nicotine administration also increases P20 component amplitude while decreasing N40 amplitude and further extends the effects of nicotine in an emerging, novel model (event related gamma oscillations) of sensory information processing. The results also support the hypothesis that chronic administration of nicotine may be beneficial to individuals with deficits in neurocognitive functions, such as individuals with schizophrenia.

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POS1-12  
THE IMPACT OF BUPROPION ON CUE-REACTIVITY AND THE SUBJECTIVE EFFECTS OF SMOKING IN AD LIB SMOKERS

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Bupropion is considered a first-line pharmacotherapy for smoking cessation, but its mechanisms of action are unclear. The present study examined the effect of bupropion on smokers’ biased reactivity towards smoking-related cues and the subjective effects of smoking. In a parallel, double-blind study, 32 daily smokers who smoked at least 10 cigarettes per day and were not trying to quit or reduce smoking, were randomly assigned to receive bupropion (300mg/day) or placebo for six weeks. Outcome measures were collected in bi-weekly experimental sessions and in a daily diary. At each session, subjects smoked their usual brand of cigarette through a puff topography machine. Fifty minutes later, they were exposed to neutral and smoking-related picture cues. The subjective effects of smoking and the response to cues were assessed using validated scales and questionnaires. Attentional bias towards smoking-related words was assessed using the Stroop paradigm. In the diary, the subjective experiences of smoking and daily cigarette counts were recorded. Serum cotinine levels were measured pre- and post-treatment. The cotinine concentration decreased from 280 (±133) µg/l at baseline to 205 (±108) µg/l at end of treatment, in the bupropion group (p=0.028). No change in serum cotinine was found in the placebo group (p=0.9). Number of cigarettes smoked per day and puff topography did not significantly change in either group. Both groups reported higher craving (p<0.05) and withdrawal (p=0.014) after exposure to smoking pictures, compared to neutral pictures, and paid more attention to smoking words than neutral words (p=0.051), but with no significant differences between bupropion and placebo groups (p=0.1). Bupropion also did not affect smoking satisfaction and smoking-induced psychological reward, aversion, reduction in craving, and restlessness compared to placebo (p>0.1). This is the first study to systematically evaluate the impact of bupropion on cue-reactivity in smokers not trying to quit. These findings do not support reduction in cue-reactivity or attenuation of the subjective effects of smoking as potential mechanisms of action of bupropion.

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The majority of current smokers are not highly motivated to quit. Thus there is a need to better understand the process of increasing motivation. The present study examined the effects of a brief computerized motivational intervention on reactivity to smoking cues. We hypothesized that a smoking-related intervention would be associated with acute reductions in cue-elicited cravings to smoke. Participants were 108 smokers ages 18-50 (mean=25) who smoked at least 10 cpd (mean=17) for at least one year, and who reported a low level of baseline motivation to quit smoking using Stages of Change (SOC) and Contemplation Ladder (CL) indices. Participants were randomly assigned to view a smoking-, nutrition-, or no-intervention. All three conditions were matched for length and format. The smoking and nutrition interventions provided tailored information based partly on Motivational Interviewing techniques. The no-intervention control provided information based on participant. Participants viewed smoking, nutrition, and neutral cues on a computer monitor before and after the intervention, and rated their subjective craving to smoke in response to each cue. Results demonstrated that participants who viewed either the smoking or nutrition intervention had lower post-intervention cue-elicited craving, relative to those who viewed the nature presentation (p<.05). This suggests that health-related interventions, in general, may be effective in reducing cue-elicited cravings to smoke. In addition, there was a relationship between changes in motivation to quit smoking and changes in cue reactivity. Only those who received the smoking intervention and reported increased motivation to quit (i.e., increases in CL score, increases in SOC stage) exhibited decreases in cue-elicited craving (p<.05). Overall, these findings suggest that a brief motivational intervention for smokers can decrease cue-elicited craving and increase motivation to quit smoking, but that the important components of the intervention are unknown. Future studies should determine the aspects of the intervention that are most associated with change, and examine the duration of these effects.

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POS1-13 EFFECTS OF A BRIEF COMPUTERIZED INTERVENTION ON CUE-ELICITED CRAVINGS TO SMOKE

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POS1-14 ALCOHOL DEPENDENCE SEVERITY PREDICTS CIGARETTE CRAVING IN PATIENTS SEEKING CONCURRENT ALCOHOL AND TOBACCO TREATMENT

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Concurrent treatment of alcohol problems and cigarette smoking presents unique challenges due to potential alcohol-tobacco interactions. Individual differences in alcohol dependence severity (ADS) have been found to impact alcohol treatment response, but the impact of these differences on smoking cessation is uncertain. The present study is a preliminary, cross-sectional examination of the relationship between ADS and cigarette craving prior to the beginning of treatment. Individuals (N=106) seeking concurrent alcohol and tobacco outpatient treatment were instructed to refrain from drinking alcohol at least three days prior to intake but were permitted to continue smoking cigarettes. The average number of days since last drink was 7.3 (SD=8.7). Nearly three-fourths of the sample was male, the mean age was 44.4 (SD=10.4) years, and on average participants reported smoking 24.5 (SD=9.3) cigarettes per day (CPD). At intake, participants completed a measure of ADS, a 5-item retrospective (previous week) measure of alcohol craving, and a similarly-worded 5-item measure of cigarette craving. Both craving scales were found to be internally consistent. The two craving scales were not significantly correlated (r=-.16), which suggests participants were able to discriminate between alcohol and cigarette craving. A regression was computed with ADS predicting cigarette craving while controlling for CPD and days since last drink. Interestingly, CPD was not significantly related to total craving, yet ADS was a significant predictor of cigarette craving and accounted for nearly 7% of the variance. These findings are based on Concurrent treatment data, however, additional analyses will be computed examining ADS as a predictor of initial smoking cessation and cigarette urges measured by ecological momentary assessments. Preliminary findings suggest an alcohol-tobacco interaction process that could impact smoking cessation treatment for patients with severe alcohol dependence.

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POS1-15 TEMPORAL PATTERNS OF CRAVING AND SMOKING: DIFFERENCES BETWEEN WEEKDAYS AND WEEKENDS

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We have previously described systematic patterns in smoking and craving throughout the waking day. Previous analyses were restricted to data collected on weekdays therefore these patterns might be unique to smoking occurring during the workweek. Here, we compare and contrast temporal patterns of craving and smoking observed on weekdays and weekends. 278 heavy smokers (>5 cpd) used Electronic Diaries (EDs) to track craving and smoking over 14 days. Waking hours were divided into 8 “bins” of approximately 2 hours, cigarette counts were tallied, and mean ratings for craving were calculated for each bin. We analyzed within-day temporal patterns of smoking and craving while controlling for trends over days. Smoking and craving showed systematic variation over time during the waking day on both weekdays and weekends (all p's<.0001). Like smoking, craving showed heightened levels in the first hours of the day, both on weekdays and weekends. The association across time blocks between weekday and weekend smoking frequency and craving intensity was modest (smoking r=.06, p<.006), and craving (r=.06, p<.008), but differed across subsets of smokers. A previously-identified subgroup whose smoking declined over time within a day demonstrated a consistent but modest weekend-weekday correlation (smoking r=.21, p<.008; craving r=.21, p<.009), while other subgroups of smokers, including those who showed marked peaks of morning craving and smoking, showed no significant association between weekend and weekday patterns. These exploratory findings suggest that smoking and craving vary over time on both weekdays and weekends, but often in different patterns, suggesting influence by environmental context and demand varying from weekdays to weekends.

This research was funded by NIDA grant DA08084. Dr. Shiffman serves as consultant to GlaxoSmithKline Consumer Healthcare on an exclusive basis regarding matters relating to smoking cessation and also is a partner in a company that is developing a new nicotine medication. Dr. Shiffman is a co-founder of inivodata, inc., which provides electronic diary services for clinical research. Dr. Chandra serves as consultant to GlaxoSmithKline Consumer Healthcare regarding matters relevant to smoking cessation.

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POS1-16 EFFECTS OF SMOKING CUES ON CRAVING FOR ALCOHOL AND CIGARETTES IN DRINKERS WHO SMOKE

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Smokers with alcohol use disorders may experience heightened craving for alcohol, as well as tobacco, in response to cues associated with tobacco. These individuals may find it harder to quit smoking and/or at elevated risk for relapse upon exposure to tobacco cues. To investigate this possibility, we recruited 7 smokers with hazardous alcohol use or alcohol abuse (age 36 ±14.4 years; 57% White 43%African American, 71% female; 18.1 ±8.3 cigarettes/day; FTND 4.1 ±2.4) to participate in two sessions involving an 18 minute test of cue-reactivity, each preceded by one hour’s smoking abstinence. The cue-reactivity procedure consisted of one minute of cigarette cue exposure alternating 3 times with one minute of neutral cue exposure. Craving was measured on a 0-10 visual analog scale. We hypothesized that craving for both tobacco and alcohol would be greater in response to cigarette cue exposure than to neutral cues. Cigarette craving increased 2.5 ±2.6 [SD] in response to the active cue, as opposed to 0.27 ±1.9 for the neutral cue. Alcohol craving increased 0.01 ±0.36 in response to the active cue and 0.08 ±0.36 for the neutral cue. Further research in a larger sample will be needed to determine whether this unexpected pattern of cross cue reactivity will persist and whether differential cue reactivity will correspond to response to cessation interventions involving pharmacotherapy.

This study was conducted while the first author was at the University of Michigan Nicotine Program. Funded by the University of Michigan Tobacco Research Network.

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POS1-17 INTENT AND DESIRE TO SMOKE: DIFFERENCES AMONG EX-SMOKERS BASED ON CRAVING
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Craving has been shown to strongly predict smoking relapse (Piasecki, 2006). Although craving may diminish with length of abstinence, ex-smokers continue to report craving even after years of quitting smoking (Daughton et al., 1999). Thus, clinical researchers continue to examine the dynamics of craving as it relates to relapse. As part of a larger study, we assessed craving, and its relationships with desire and intention to smoke, among 39 ex-smokers. Ex-smokers were characterized by at least one psychiatric disorder and had abstained from smoking for a minimum of six months (mean = 58.3 months, SD = 77.1; validated by expired CO and urine cotinine analyses). Approximately half of ex-smokers (n = 20) reported experiencing current craving; the other half (n = 19) denied such experience. We hypothesized that, compared to non-cravers, current cravers would endorse a greater desire and intention to smoke. Results of t-test analyses partially supported our hypothesis. Cravers reported greater desire to smoke than non-cravers, t(37) = -1.85, p < .05, d = 0.31. Though cravers reported shorter duration of abstinence than non-cravers, t(37) = 2.52, p < .05, d = 0.40, suggesting factors other than craving may drive intent to smoke. Exploratory analyses were conducted to evaluate group differences on variables conceptually related to urge and intent, including anxiety sensitivity and belief that smoking would result in negative affect reduction. Consistent with data indicating that anxiety sensitivity predicts reports of withdrawal symptoms early in a quit attempt (Zvolensky et al., 2004), ex-smokers with current craving endorsed greater anxiety sensitivity, t(33) = -1.83, p < .01, d = 0.62, and a stronger belief that smoking would relieve negative affect, t(37) = 2.62, p < .05, d = 0.31. Though cravers reported shorter duration of abstinence than non-cravers, t(37) = 2.28, p < .01, additional differences reported here suggest that ex-smokers with current craving differ in other meaningful ways. Given these differences, and the role of craving in relapse to cigarette smoking, relapse prevention efforts may benefit from greater emphasis on these factors.

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POS1-18 CONSISTENCY AND RELIABILITY OF RESPONSES TO IMAGERY-INDUCED TOBACCO CRAVING OVER MULTIPLE SESSIONS
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Environmental cues are a major factor in the maintenance of and relapse to smoking cigarettes. In the laboratory, cue-reactivity studies have shown that active imagery of audio scripts describing smoking urges scenarios reliably increased self-reported tobacco craving compared with neutral imagery scripts. Although studies have demonstrated the validity of imagery procedures to elicit tobacco-craving responses in single sessions, few studies have examined the consistency and reliability of responding in the same individuals over multiple experimental sessions. In this study, male non-abstinent smokers (n = 15) were presented with a randomized series of imagery scripts that varied in the intensity of smoking urge content and gender of voice presentation. At each of five sessions spaced over several weeks (mean = 25 days), participants were exposed to six imagery trials (two each of no-, low-, and high-intensity imagery scripts). After each trial, participants completed three subjectively measurable measures of tobacco craving and mood (Tobacco Craving Questionnaire, visual analog scales, and mood form). Ratings of positive mood decreased, whereas ratings of craving and negative mood significantly increased as a function of smoking urge intensity, which was consistent across the five sessions. Further, significant intraclass correlations indicated that craving and mood responses were highly reliable over the five sessions, as well as across two, three, and four sessions. These results have practical implications for examining individual differences in sensitivity to smoking cues and for studies involving repeated measurement of elicted craving over time.

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POS1-19 CRAVING AND WITHDRAWAL DURING THREE HOURS ABSTINENCE: EFFECTS OF DEPENDENCE, DEPRESSION, SEX, AND ANTI-SMOKING ADS
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To study the course of early abstinence, a time when many quit attempts fail, we recruited 46 smokers (mean age [SD]: 40.5 [9.6]; 46% female; 63% White) who were motivated to quit. Participants were stratified on dependence (FTND<3 vs. FTND<4) and depression (CESD<16 and no CIDI lifetime MDD diagnosis vs. CESD>15 or CIDI MDD diagnosis). Participants remained in the laboratory for 3 hours of monitored smoking abstinence; craving, withdrawal, stage of change, and self-efficacy about quitting were assessed at baseline and at hours 1, 2, and 3. A significant time x dependence interaction was observed for craving such that high-dependent smokers showed a more pronounced increase than low-dependent smokers (p=.041). For impatience, a significant time x depression interaction emerged (p=.030) such that the depressed smokers increased and the non-depressed smokers decreased. On the Social/Positive Affect subscale of the Self Efficacy for Quitting scale, we found a time x sex interaction (p=.014), with men’s scores increasing and women’s decreasing. After 3 hours, participants were exposed to 15 minutes of anti-smoking messages and assessed once more. We found depression x time (prepost) interactions for anxiety (p=.045) and restlessness (p=.045), with depressed participants showing decreases in response to the messages, and non-depressed participants showing increases. The opposite was true for impatience (p=.038). Stage of Change and Negative Affect and Social/Positive Affect subscale scores increased significantly overall in response to the intervention. A time x dependence interaction emerged for Social/Positive Affect, with high-dependent smokers showing no change and low-dependent smokers increasing (p=.050).

Conclusions: (1) The effects of dependence are particularly salient in early abstinence, with a greater craving increase in high-dependent smokers and a lesser increase in self-efficacy for quitting, at least on one subscale, in response to anti-smoking messages; (2) Differences based on sex and depression may also complicate the course of early abstinence; and (3) Exposure to anti-smoking messages produces an acute increase in readiness to quit.

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POS1-20  GENDER DIFFERENCES IN THE EFFECTS OF ABSTINENCE FROM SMOKING AND RELIEF DUE TO SMOKING ON MEASURES OF NEGATIVE EMOTIONAL STATES

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Individuals who are nicotine-dependent and smoke cigarettes experience negative affect and other withdrawal symptoms during early abstinence from cigarette smoking. These symptoms contribute to the difficulty they experience during attempts to quit smoking. Previous studies have indicated that female smokers are less successful in smoking cessation than males, and are more likely to relapse. We have extended this work by testing for gender differences in the effects of overnight abstinence and acute smoking following abstinence on negative emotional states. Twenty-eight male (mean age=39 years) and 18 female (mean age=34 years) smokers participated. All of the smokers had a smoking history of at least two years, and were smoking more than 13 cigarettes per day at the time of study. Each participant was tested on two separate days. On one day, testing began after smoking ad libitum (<45 min after the last cigarette); and on the other, testing began after >13 h abstinence from smoking. On each test day, mood was assessed by the Profile of Mood States (POMS) during two test blocks, one before and one after smoking one cigarette (participant’s usual brand). Data from the POMS scales were subjected to repeated measures analysis of variance, with test day and test block included as within-subject, independent variables, and gender included as a between-subject variable. A three-way interaction between test session, test block and gender was observed in analyses of the tension-anxiety and anger-hostility subscales of the POMS. Post hoc analysis indicated that this interaction reflected greater increases in self-reports on these subscales from female than from male smokers in the first test block (before smoking) after >13 h abstinence. These data raise the possibility that effects of smoking on negative affect may play a greater role in the maintenance of smoking by females than by males, because female smokers enjoy more relief of negative affect after cigarette smoking than male smokers.

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POS1-21  SMOKING RELATED VIDEOS FOR USE IN CUE-INDUCED CRAVING PARADIGMS: CONSIDERATIONS OF GENDER

Charles Tong1, Dana H. Bovbjerg, and Joel Erblich

Environmental cues (e.g., the sight of a cigarette) have long been recognized as important triggers for craving in smokers. Available imaging technologies (e.g., fMRI) would allow investigation of the neural mechanisms for cue-induced craving, but progress is hampered by methodological difficulties with traditional cue exposure in the MRI setting. As previous laboratory studies in other settings have found that watching a video can elicit peripheral physiological responses (e.g., cardiovascular responses) comparable to naturalistic exposure, the goal of the present study was to develop a standardized set of videotaped cues (smoking and control) for use in MRI studies. High-quality, high-fidelity videos were developed using state-of-the-art digital animation techniques. Among the smoking cue videos, 6 involved identifiable female actors, 5 male, and one was ambiguous. Participants were 20 smokers (mean age=37.7 years, 50% female, 40% college educated, 40% income >$30K, 20% Black, 20% White, 50% Hispanic) recruited by advertisement. Each was exposed to the 24 videos in a counterbalanced order under laboratory conditions. Dependent measures included heart rate, blood pressure, skin conductance, and temperature, as well as self-reported craving (0-100) following each video. A multivariate ANOVA comparing responses to the smoking and neutral videos across all outcome domains supported the primary hypothesis: smokers had greater reactivity to the smoking videos than to the neutral videos ($p<.01). Univariate ANOVAs confirmed significant response differences between neutral and smoking videos in several outcome domains, most notably a 10.3 unit increase in self-reported craving. Interestingly, craving and cardiovascular responses also showed significant interactions depending upon participants’ and actors’ gender. When viewing female actresses smoking, women had significantly greater reactivity than when viewing male actors smoking. The results support the feasibility of developing a set of videos as an effective and convenient assessment tool for investigation of cue eliciting craving, which may be sensitive to gender-specific processes.

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POS1-22  ANXIETY SENSITIVITY PREDICTS TOBACCO CRAVING IN ALCOHOLIC SMOKERS FOLLOWING SMOKING CESSATION TREATMENT

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Higher levels of anxiety sensitivity (i.e., fear or intolerance of anxiety symptoms) have been associated with lower motivation to quit smoking and early relapse following smoking cessation in young adult smokers. Additionally, levels of anxiety sensitivity have been shown to be elevated in a sample of alcohol dependent individuals. It has been proposed that difficulties with tolerating nicotine and alcohol withdrawal may be related to anxiety sensitivity because of the increases in aversive bodily sensations and negative affect associated with the cessation of smoking and alcohol use. In light of these considerations, it is hypothesized that higher levels of anxiety sensitivity may be associated with increased craving for nicotine following a smoking cessation attempt. To date, little research has examined the association between anxiety sensitivity and tobacco craving following smoking cessation treatment in alcohol dependent smokers, a highly treatment refractory population. The present study examined the relationships between levels of anxiety sensitivity and craving for tobacco at the end of smoking cessation treatment for 36 alcohol-dependent smokers who were engaged in an intensive CBT smoking cessation intervention plus nicotine patches, concurrent with a 3-week intensive outpatient alcohol treatment. Baseline levels of anxiety sensitivity were measured via the Anxiety Sensitivity Index and levels of tobacco craving were assessed with a single 5-point item at baseline and at the end of treatment. Regression analyses demonstrated that after controlling for baseline levels of tobacco craving and smoking cessation status (Beta=.167, n.s., and Beta=.344, p < .05, respectively, Level 1 R2=.214), anxiety sensitivity was a significant predictor of tobacco craving at the end of treatment in a sample of alcoholic smokers engaged in smoking cessation (Beta=.435, p<.05, Level 2 R2=.392). Future research may further explore the relationship between anxiety sensitivity, craving for tobacco, and smoking cessation outcomes.

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POS1-23 CUE REACTIVITY IN IMPULSIVE SMokers

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Nearly 25% of American adults remain regular smokers. Current smokers may be especially likely to possess comorbid personality features, such as impulsivity, that impair their ability to quit. Impulsivity is usually conceptualized as difficulty inhibiting response to gratification. We wondered whether being disproportionately drawn to rewarding stimuli is another aspect of impulsivity especially relevant to tobacco use. The current study tested the hypothesis that more impulsive smokers are more responsive to cigarette cues than other smokers. In a repeated measures design, 60 euthymic, adult smokers (50% female) were exposed to a smoking cue and a neutral cue in 2 experimental sessions separated by at least 24 hours. Cue reactivity was operationalized as changes in cigarette craving and cardiovascular activity and preference for immediate versus delayed smoking following cue exposure. We predicted that more impulsive smokers would respond disproportionately to the smoking cue condition in terms of cigarette craving, cardiovascular reactivity, and the willingness to delay smoking. Mixed-effects regression models indicated that impulsivity predicted a disproportionate response to the smoking cue but not to the neutral cue in terms of cigarette craving [t (161) = 3.21, p = .002] but not heart rate [t (161) = 1.07, p = .284]. Smokers with higher levels of impulsivity exhibited greater preference for immediate cigarette rewards over larger, delayed rewards in terms of both hypothetical [t (58) = 5.99, p = .001] and actual [z = 3.02, p = .003] rewards. Findings suggest that both increased craving and difficulty inhibiting responsiveness to smoking cues contribute to more impulsive smokers’ disproportionate difficulty with cessation.

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POS1-24 NICOTINE DEPENDENCE AND NEGATIVE AFFECT MANAGEMENT EXPECTANCIES FOR SMOKING MODERATE THE ACUTE EFFECTS OF NICOTINE ON NEGATIVE AFFECT IN ADOLESCENT SMOKERS

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Although adolescent cigarette smoking remains a critical public health concern, little is known about the reinforcing mechanisms governing smoking in this vulnerable population. Both anecdotal and retrospective self-report data suggest that adolescents attribute their smoking to its reputed ability to reduce negative affect (NA) and/or increase positive affect (PA). As such, we measured the acute effects of nicotine, as administered via tobacco cigarettes, on both PA and NA in a group of 45 adolescent smokers (mean age=17.8; 81.5% females) who smoked either a high-yield (HY; 1.14 mg/nic; 17.9 mg/tar) or denicotinized (DN; 0.6 mg/nic; 15.9 mg/tar) nicotine cigarette (Ultratech, Inc.) in an ad libitum fashion. Participants smoked on average, 5.6 days a week and 3.6 cigarettes a day. All participants completed the Positive and Negative Affective Schedule (PANAS; Watson et al., 1988) immediately before (Time 1) and after (Time 2) the smoking period. As previously reported (Ettav, Greenstein, Wardle, Yates, & Kassel, 2005), findings revealed that, regardless of nicotine content, adolescents who smoked a cigarette experienced reductions in both PA and NA. Further analyses revealed that the reduction in NA was moderated by both nicotine dependence (modified Fagerstrom Tolerance Questionnaire [mFTQ]; Prokhorov et al., 2000), p=0.04, and negative affect regulation expectancies (Smoking Expectations Questionnaire [SEQ]; Wahl et al., 2005), p=0.002. More specifically, then, those smokers who scored above the median on the mFTQ and who smoked the HY cigarette experienced the largest reductions in NA. Comparable to what was observed with the mFTQ analyses, those who smoked the HY cigarette and scored high on the SEQ (held strong beliefs that smoking relieves NA) derived the largest reductions in NA. Interestingly, those who smoked the HY cigarette, but held lower expectations of smoking’s ability to assuage NA, actually experienced a slight (albeit non-significant) exacerbation of NA. No such interaction effects were observed for PA. Implications of these findings and methodological issues pertinent to the study of drug effects on emotion will be discussed.

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POS1-25 EXAMINING THE DISCONNECT BETWEEN LEVEL OF NICOTINE DEPENDENCE AND SMOKING RATE IN A SAMPLE OF DAILY SMOKERS

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Current theoretical models of nicotine addiction assume a relatively close relationship between the intensity and duration of nicotine use and the development of nicotine dependence. However, epidemiological analyses suggest this relationship is weaker than current models expect. The current research analyzed data pooled from five laboratory studies to further examine the relationship between use (smoking rate) and dependence in a non-treatment-seeking sample of 747 daily smokers and determine the degree to which use and dependence predict smoking urge. Nicotine dependence was assessed with the Nicotine Dependence Syndrome Scale (NDSS; Shiffman, Waters, & Hickox, 2004). A subset of these participants (n=380) were required to abstain from smoking for at least 7 hours and exposed to in vivo cigarette cues while asked to report their urge to smoke on a 0-100 scale. The correlation between cigarettes per day and dependence was weak (NDSS-Total: r=.19, p=.0001; Priority subscale: r=.20, p=.001). Tolerance subscale: r=.10, p<.05; other subscales: ns). NDSS-Total was a significant predictor of in-laboratory craving (r=.28, p=.0001), as were the Drive (r=.20, p=.001), Priority (r=.17, p=.001) and Continuity (r=.19, p=.0002) subscales. In contrast, smoking rate failed to predict the magnitude of the craving response during the exposure period (r=.10, p<.05) despite substantial variability in both use and craving. When these correlations were directly compared, craving was more closely related to dependence (NDSS-Total) than it was to smoking rate (r=.25, p<.01). The relationship between NDSS-Total and craving was maintained even after accounting for partial (r=.31, p=.0001). Furthermore, similar findings were observed after removing craving-related items on the NDSS, suggesting that the relationship cannot be accounted for by simple content overlap on the measures. These data further highlight the surprisingly weak link between amount of use and dependence and suggest that individual differences in dependence may relate to craving independent of frequency of nicotine use. This research was supported by grant DA010605 from the National Institute on Drug Abuse to Michael Sayette.

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POS1-26 NICOTINE DEPENDENCE LEVEL AND OCCURRENCE OF SPECIFIC WITHDRAWAL FEATURES FOR NICOTINE DEPENDENCE

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Background and Aim: The aim of this study is to advance our understanding of how level of nicotine dependence as defined by the Fagerström Test of Nicotine Dependence (FTND) influences the occurrence of specific nicotine withdrawal symptoms not included as part of the FTND. We classified nicotine dependence in two mutually exclusive categories, 1) low dependence (LD; FTND≤4) and 2) high dependence (HD; FTND>4). We then estimated the degree of association that links specific nicotine withdrawal features with dependence level. Methods: A sample of 258 smokers stratified on depression (low depression: Center for Epidemiological Studies-Depression (CESD) <16 and no lifetime CIDI depression diagnosis; high depression: CESD>16 or positive lifetime CIDI depression diagnosis) was recruited from the local community via newspaper ads and public notices. HD smokers comprised 63.6% of the sample while LD smokers 36.4% of the study population. Multivariate response models (GLM/GEE) were used to evaluate excess risk. Sex, age of smoking initiation, and history of depression were included in the model to obtain adjusted estimates. Results: Based on a GLM/GEE Poisson regression model which addresses interdependencies among the withdrawal features, we observed a small to modest statistically robust association between FTND measured nicotine dependence level and specific withdrawal features. Some of these specific withdrawal features were irritation/anger (adjusted relative risk, aRR=1.2; 95% CI 1.03, 1.4); nervousness (aRR =1.3; 95% CI 1.1, 1.6); and restlessness (aRR=1.2; 95% CI 1.1, 1.4). This association was found even with statistical adjustments for the above-listed covariates (p<0.05). Smoking the withdrawal features not related to nicotine dependence level were craving (aRR=1.1; 95% CI 0.99, 1.2) and persistent cough (aRR=0.9; 95% CI 0.7, 1.3). Discussion: Based upon this initial evidence about nicotine dependence level and its statistically robust association with endorsement preference for specific withdrawal features, we will seek more evidence and the replication of our findings during the withdrawal features of dependence for tobacco and other drugs.

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POS1-27  THE SENSITIZATION-HOMEOSTASIS MODEL OF NICOTINE DEPENDENCE: RECENT CLINICAL AND BASIC SCIENCE EVIDENCE

Joseph R DiFranza*, Robert J. Wellman, University of Massachusetts Medical School

The sensitization-homeostasis theory integrates neuroscience with clinical observations regarding how nicotine dependence develops, progresses, and resolves in humans. The theory describes the process of dependence as beginning with the first cigarette. Its central tenet is that nicotine's dependence liability derives from its ability to stimulate neural pathways that are responsible for the suppression of craving. As a result of sensitization, the craving suppressor induced by nicotine is magnified to super-physiologic levels. The sensitization of neurons responsible for craving initiates compensatory homeostatic measures that stimulate the craving pathways and result in continued use of nicotine. Separate homeostatic mechanisms are responsible for craving, withdrawal, and tolerance. The sensitization-homeostasis model is unique in its attribution of dependence to craving suppression, its attention to the temporal relationships between clinical features of nicotine dependence, and its extensive integration of clinical observations and basic science. Since its publication, several clinical and basic science studies have been conducted providing tests of different aspects of this theory. These studies, both published and under review, will be presented and discussed.

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POS1-28  SYMPTOMS OF TOBACCO DEPENDENCE CAN APPEAR WITHIN DAYS OF THE FIRST CIGARETTE

Joseph DiFranza*, Judith Savageau, Kenneth Fletcher, Lori Pbert, Judith Ockene, Robert Wellman, University of Massachusetts Medical School; Jennifer O'Loughlin, McGill University; Ann McNeill, University of London

The first Development and Assessment of Nicotine Dependence in Youth study (DANDY-1) reported that symptoms of dependence commonly appear with intermittent smoking. In DANDY-2 we sought to replicate and extend DANDY-1 by using diagnostic criteria for dependence and a biochemical measure of nicotine intake. We studied 1,246 6th grade students in a 4-year prospective study employing 11 interviews. Outcome measures included diminished autonomy over nicotine as measured by the Hooked On Nicotine Checklist, and nicotine dependence as defined in the International Classification of Diseases (ICD-10). Cox-proportional hazards analyses were conducted with censoring 30 days after the last cigarette. The 10th and 25th percentiles for the latency from the first inhalation to the loss of autonomy were 2 days and 30 days respectively (SD, 725; range, 0-3898). The 25th percentiles for tobacco use when autonomy was lost were smoking 1 day/month (median, 5.5 days; SD, 11.1), smoking 1 cigarette/month (median, 7; SD, 93.4), and a salivary cotinine of 0.4ng/ml (median, 1.9; SD, 36.4). The 25th percentiles at the onset of ICD-10 dependence were smoking 8 days/month (median, 28; SD, 11.0), smoking 8 cigarettes/month (median, 46; SD, 107.3), and a salivary cotinine of 0.4ng/ml (median, 5.35; SD, 45.4). Salivary cotinine confirmed the reliability of self-reports. The nearly identical results in DANDY-1 and DANDY-2 in terms of the median amount (8 vs. 7 cigarettes/month) and frequency of smoking (4 vs. 5.5 days/month) at the onset of lost autonomy strengthen our confidence in the data and suggest that these values may be stable across populations. Symptoms of tobacco dependence can appear within days of the first cigarette and with use as infrequent as one cigarette/month. Prudence dictates that youths must be warned that it may take only one cigarette to initiate dependence.

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POS1-29  PHYSIOLOGIC SUSCEPTIBILITY TO NICOTINE DEPENDENCE

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Our objective is to identify factors that place youths at risk of progressing from first inhaling on a cigarette to dependence. The Development and Assessment of Nicotine Dependence in Youth study, is a 4-year prospective study employing 11 interviews with a cohort of 6th graders in 8 Massachusetts communities. The participants were a convenience sample of 1,246 public school students (mean age at baseline, 12.2 years). The main outcome measures were diminished autonomy over nicotine as measured by the Hooked On Nicotine Checklist, and nicotine dependence as defined in the International Classification of Diseases-10th revision. Among 217 youths who had inhaled from a cigarette, only one factor out of 45 consistently predicted the loss of autonomy over nicotine in both the logistic regression and Cox proportional hazards models: having experienced relaxation the first time inhaling (adjusted odds ratio (OR), 15.77; 95% CI, 5.14-48.38; P<.001), adjusted hazard ratio (HR), 3.36; 95% CI, 1.95-5.46; P<.001). The development of nicotine dependence was predicted in both models by having experienced relaxation the first time inhaling (OR, 6.07; 95% CI, 2.69-13.68; P<.001); HR, 2.43; 95% CI, 1.27-4.85; P=.007), familiarity with Joe Camel cartoon advertising (OR, 4.22; 95% CI, 2.01-8.86; P=.001); HR, 2.19; 95% CI, 1.11-4.32; P=.02), and novelty seeking (OR, 1.80; 95% CI, 1.26-2.53; P=.001); HR, 1.58; 95% CI, 1.06-2.6; P=.02). Once exposure to nicotine had occurred, few risk factors for smoking consistently contributed to individual differences in susceptibility to the development of dependence or loss of autonomy. An experience of relaxation in response to the first dose of nicotine was the only one of 45 factors that predicted dependence or loss autonomy in all models. These data support the notion that the process of dependence is initiated by the first cigarette.

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POS1-30  TOBACCO DEPENDENCE MARKS PRESCRIPTION OPIOID MISUSE: THEORETICAL BASIS AND RESEARCH AGENDA

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Opioid analgesics, such as hydrocodone, oxycodone, and morphine are used by millions of people without evidence of abuse. Although the risk of addiction or abuse developing during medical use (iatrogenic addiction) among pain patients is low in patients without a prior history of abuse or addiction, it is clear that some abuse does occur in pain patients. Abuse is not randomly distributed among patients. The risk is greatest in young adult males with some combination of the following characteristics: histories of opioid abuse, injection use and/or illicit distribution, heavy alcoholic beverage drinking, other drug abuse and addiction, recent marijuana use, and cigarette smoking. One study demonstrated that the question: “smoke within one hour of waking” was most predictive item on a screening tool for risk of aberrant drug-related behavior among pain patients on opioids. Cigarette smoking is recognized as a risk factor for drinking and drug use among youth and a correlate of heavy drinking and drug abuse among adults. However, the observations in pain patients have clinical implications for pain management and raise many research questions that might fruitfully be addressed through collaborations between tobacco and pain researchers. Clinical issues include the possibility that some measure or combination of measures of tobacco use and/or nicotine dependence may provide health professionals a useful sign that the patient is at elevated risk of what might be viewed as the “side-effect” of abuse of their medication. Such signs can help therapists work with their patients to minimize the risk and detect abuse if it occurs without compromising pain management. Research questions include the following: (1) What measures of tobacco use are best correlated with opioid abuse? (2) What is the role of nicotine dependence and withdrawal? (3) Is former tobacco use predictive of opioid abuse? (4) What are the mechanisms underlying the relationship? (5) Does past or ongoing treatment of tobacco dependence alter the risk of opioid abuse? and (6) What is the best approach to reducing opioid abuse in pain patients and is there a role of treatment of tobacco dependence?

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POS1-31 POPULATION HEALTH AND THE HARDCORE SMOKER: DOES INDIVIDUAL RISK DETERMINE POPULATION CHANGES?

Michael O. Chaiton*, University of Toronto

The hardening hypothesis suggests that, in countries with developed tobacco control strategies, many smokers who found it easier to quit have done so already, and as such have left proportionally more “hardcore” smokers in the population. Over time, this population of hardcore smokers will continue to increase relative to other smokers. However, a National Cancer Institute monograph on hardening in population concluded that there was no indication that hardening was occurring. This paper argues that the hardening hypothesis extrapolates observations of individual risk behavior (difficulty in quitting) to the population level. The paper applies an alternative theory, Geoffrey Rose’s theory of population health, to the issue of declining smoking prevalence and suggests that the determinants of population change will not necessarily affect the distribution of individual characteristics within the population. The historical evidence of smoking in the population is consistent with Rose’s hypothesis, but less consistent with the hardening hypothesis. Reductions in smoking prevalence have been accompanied by reductions in the average number of cigarettes smoked per day and level of nicotine dependence. Such activity is unexpected under the hardening hypothesis, as the opposite scenario would have been expected to occur, but is unproblematic under the application of Rose’s hypothesis of population changes. The hardening of the population is not a necessary extrapolation from the finding that some individuals have greater difficulty quitting smoking.

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POS1-32 ARE ‘STATE OF ART’ SMOKING PREVENTION PROGRAMS FOR ADOLESCENTS GENDER SENSITIVE? SUGGESTIONS FROM THE EU-DAP Trial

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Formally evaluated prevention programs against substance use seldom report on intervention effects according to gender. The EU-DAP multicentric trial was conducted in 2004-2005 to study the efficacy of an innovative European program against tobacco, alcohol and illicit substances in junior high school, based on a comprehensive social influence approach. The short term follow-up showed significant program effects in curbing smoking and other substance use, with stronger effects for regular and daily smoking than for less advanced behavior. However, there was a significant program/gender interaction, with boys showing high responsiveness (multilevel adjusted OR regular smoking = 0.68, CI=0.50-0.93; OR daily smoking 0.49, CI=0.34-0.71), while the effect was not detected among girls (OR regular=1.07, CI=0.74-1.55; OR daily=0.99, CI=0.64-1.52). This pattern was constant across all substance use and across geographical locations. Possible interpretations include differential stages of smoking acquisition or nicotine dependence at the time of prevention (general host sensitivity) or specific gender sensitivity of the underlying pedagogic models in ‘state of art’ prevention. The findings highlight the importance of studying gender differences in prevention research.

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POS1-33 TYPES OF PHYSICAL ACTIVITY AND SMOKING IN ADOLESCENTS: A MEDIATION ANALYSIS VIA SPORT COMPETENCE BELIEFS AND DEPRESSIVE SYMPTOMS

Daniel Rodriguez, Ph.D.*, James Tscherne, B.A., University of Pennsylvania; Genevieve Fridlund Dunton, Ph.D., University of Southern California

Research supports an inverse relationship between physical activity and smoking in adolescents. It is unclear though, whether one type of physical activity is most protective, and how or why physical activity affects adolescent smoking. We sought to answer these questions with a structural equation model (SEM) proposing the effect of physical activity (PA) participation on adolescent smoking is a causal chain in which PA affects sport competence beliefs (SCB), SCB affects depressive symptoms, and depressive symptoms affects smoking. Participants were 377 adolescents (55% male, 96% Caucasian) ages 15-18, from a suburban South Eastern Pennsylvania community, taking part in a two-year cohort study (n=406) of the relationship between health habits and smoking. Participants reported engaging in 64 different physical activities, comprising group/team, individual skilled (e.g., tennis), exercise, work (e.g., gardening), recreational (e.g., badminton), and extreme sport (e.g., skateboarding) activity. We also attained the team sport rosters for the school year 2005-2006. Bivariate analysis revealed three significant correlations for PA with smoking: Team sport participation (p<.001) and group/team activity (p<.05) were negatively and extreme sport activity (p<.05) was positively associated with smoking. The full SEM fit the data well, Chi square = 21.31, p=.81, CFI=1.00, RMSEA=.00, WRMR=.34. There were no significant direct effects for any physical activity type on smoking in the full model. However, results supported three indirect effects. Team roster, and group/team and individual skilled activities each had significant negative indirect effects on smoking in causal chains via sport competence beliefs and then depressive symptoms. The findings of this study suggest that not all types of physical activity may protect against adolescent smoking, and some (e.g., extreme sport) may be associated with smoking. Moreover, the results suggest the importance of the competence beliefs and depressive symptoms in the relationship between adolescent physical activity and smoking.

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POS1-34 PSYCHIATRIC HISTORY IN ADOLESCENT SMOkers UNDERGOING SMOKING REDUCTION

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Despite a large adult literature, research specifically targeting smoking and psychiatric comorbidity among adolescents is limited. This study examined the relationship between psychiatric history, previous nicotine withdrawal symptoms, and ability to reduce cigarette smoking in 124 adolescents, ages 13-19, who were recruited from 14 suburban schools (58.9% Female, 87.9% White; Means: Age=16.6, Cigarettes/Day (CPD)=13.5, FTQ=5.4). Severity of current depressive symptoms was measured using the Center for Epidemiological Studies-Depression, and previous withdrawal symptoms were measured using the Minnesota Nicotine Withdrawal Scale. A history of previous psychiatric conditions was obtained through self-report during a medical examination. Subjects were asked to reduce: Week 1, 25% of baseline; Weeks 2-4, 50% of baseline, using one of three treatment conditions: nicotine patch, nicotine gum, or placebo. We hypothesized that a history of psychiatric symptoms would be correlated with greater nicotine dependence and difficulty in smoking reduction. At baseline, we observed that total number of psychiatric diagnoses and severity of current depression were associated (r=.219, p=.022). In addition, the total number of psychiatric diagnoses was positively correlated with CPD (r=.192, p=.043) and FTQ score (r=.275, p=.006). Severity of current depression was negatively correlated to age of first cigarette (r=.212, p=.022) and positively associated with total previous withdrawal symptoms items (r=.452, p=.000). Of the predictive models run, only time to first cigarette (0.50±minutes; 1>30 minutes) was predictive of greater smoking reduction, F(1,86.3)=4.40, p=.0388, 40.9% vs. 51.4% reduction, F(1,86.3)=4.40, p=.0388, 40.9% vs. 51.4% reduction, F(1,86.3)=4.40, p=.0388, 40.9% vs. 51.4% reduction, F(1,86.3)=4.40, p=.0388, 40.9% vs. 51.4% reduction. Future research is needed that includes a broader sample of adolescent smokers with more diverse and severe psychopathology.

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POS1-35  NEGATIVE EMOTIONALITY IS ASSOCIATED WITH CIGARETTE USE AMONG ADOLESCENTS WITH CHILDHOOD ADHD

Brooke S.G. Molina, Ph.D.*, University of Pittsburgh School of Medicine; William E. Pelham, Jr., Ph.D., State University of New York at Buffalo

Associations have been reported between Attention-Deficit/Hyperactivity Disorder and cigarette smoking beginning in adolescence. In our first follow-up study of children diagnosed with ADHD (N=142 probands followed into adolescence compared with N=100 comparison youth without ADHD), we reported more cigarette use among the probands, aged 13–18 (Molina & Pelham, 2003). We subsequently reported that fewer adaptive coping skills among the probands and less positive support from parents partially explained this association (Molina et al., 2005). In this study we examined the contribution of a temperament dimension implicated in nicotine addiction models and widely recognized as an associated feature of ADHD: negative emotionality. This sample, 94% male, 87% Caucasian, with mean age of 15.2 years, has similar demographic characteristics between the groups. Probands were from a clinic sample of elementary-aged children with ADHD; nonADHD comparison youth were recruited with advertisements in the Pittsburgh area. Negative emotionality (alpha=.88, 9 items) was from the Buss and Plomin temperament measure, mother-rated. Extent of cigarette smoking in the past 6 months was youth reported. Pearson correlations were significant between emotionality and cigarette use, r=.29, p=.00, with a significant regression coefficient, B=.28, p=.00, above and beyond current age and childhood ADHD (no/yes), with the latter effect diminishing once emotionality was entered, B=.04, p=.84. Emotionality remained significant after adding current ADHD and ODD symptoms (parent and teacher-rated), which was notable given the significant contributions by these variables in bivariate analyses (B=.28, p=.00; B=.29, p=.00, respectively). All effects remained significant after controlling for adolescent age and parent education. These findings, taken together with our previous reports of deficient coping skills, and potentially greater susceptibility to affiliation with substance-using peers, suggest that certain features of emotional undercontrol in these youth may be heightening their susceptibility to nicotine, above and beyond symptom persistence and tendencies toward oppositionality.

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POS1-36  SELF-EFFICACY MEDIATES THE EFFECT OF DEPRESSION ON SMOKING SUSCEPTIBILITY IN ADOLESCENTS

Jennifer A. Minnix, Ph.D.*, Janice A. Blalock, Ph.D., Salima Marani, M.S., Alexander V. Prokhorov, M.D., Ph.D., Paul M. Cinciripini, Ph.D.

Research indicates that negative affect and/or depression is associated with increased prevalence for smoking and higher levels of nicotine dependence in adults and adolescents. In a study of adult smokers who were participating in a smoking cessation trial, results indicated that low levels of self-efficacy partially mediated the adverse effect of baseline depression on post-treatment abstinence. The current study evaluated self-efficacy as a potential mediator between depression and smoking susceptibility in adolescents. One-thousand and ninety-three high school students who were participating in a large clinical trial evaluating an interactive, CD-ROM based smoking prevention/cessation curriculum (project ASPIRE) were included in the analyses. Students completed an extensive questionnaire battery before treatment and 18 months following treatment, which included measures of depression, self-efficacy, smoking status, and stage of smoking-behavior change. Smoking susceptibility was defined as self-reported smoking at 18 months or a denial of any commitment to remain smoke-free in the next year. Results indicated that self-efficacy partially mediated the positive relationship between baseline depression and susceptibility to smoke at 18 months, accounting for approximately 27% of the variance. These results support additional research on the efficacy of treatment components that target self-efficacy in smoking prevention interventions for depressed adolescents or adolescents who are at risk for depression.

Support for this research was provided by a postdoctoral fellowship from the M.D. Anderson Education Program in Cancer Prevention grant (R25-CAS57730) awarded to Jennifer Minnix, as well as a grant from NCI (ROICA81934-04) awarded to Alexander V. Prokhorov.

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POS1-37  ARE ADOLESCENT INFREQUENT AND OCCASIONAL SMOKE GOOD CANDIDATES FOR CESSATION INTERVENTION?

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Identifying opportunities for interrupting adolescent progression from infrequent or occasional smoking to regular smoking may be key to reversing recent trends in young adult smoking prevalence. It is important to know more about adolescent infrequent and occasional smokers with regard to their motivation, plans and self-efficacy for quitting smoking. Few studies have examined these questions: adolescent infrequent and occasional smokers often are excluded from smoking cessation intervention trials, despite their high risk for smoking escalation. This study uses baseline data from a population-based sample of 2,151 high school smokers in a large, randomized, smoking cessation trial to examine smoking and quitting history, motivation and plans to quit, self-efficacy for quitting, and intentions to smoke in the future. Results show that fewer infrequent and occasional smokers than regular smokers intended to smoke in the future (21%, 33% vs. 49%, p<.0001); more infrequent and occasional smokers than regular smokers planned to quit smoking in the next month (30%, 21% vs. 11%, p<.0001); more infrequent and occasional smokers reported strong motivation to quit (37%, 32% vs. 26%, p<.0001), many more reported strong self-efficacy for quitting (89%, 82% vs. 47%, p<.0001), and among those who had tried to quit in the past year, more infrequent and occasional smokers than regular smokers had quit for longer than one month (70%, 53% vs. 23%, p<.0001). Intervention recruitment rates were also slightly higher (81%, 80% vs. 78%, p=0.13), and intervention completion rates were significantly higher (55%, 40% vs. 38%, p<.0001), for infrequent and occasional smokers compared to regular smokers. These results demonstrate that adolescent infrequent and occasional smokers have characteristics favorable for smoking cessation and, thus, appear to be good candidates for smoking cessation intervention.

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POS1-38  CORRELATES OF REASONS TO ADOLESCENT RELAPSE AMONG CESSATION TREATMENT SEEKERS: PRELIMINARY FINDINGS

Maria Jaszyna-Gasior, M.D., Ph.D., Charles C. Collins, B.A., B.S.W.; Michelle K. Leff, M.D.; Eric T. Moollchan M.D.; NIDA Intramural Research Program, NIH, DHHS, Baltimore, MD, USA

Little prior research has focused on reasons for adolescent relapse to smoking after a quit attempt. Our aim was to explore such reasons and their demographics and smoking-related correlates. Tobacco dependent cessation treatment-seeking adolescents were enrolled to this trial. Clinical interviews including demographic and smoking history data along with history of previous quit attempts were performed. Additionally each participant was asked to report reasons for relapse to cigarette smoking in open-ended format. Responses were generally categorized as external e.g. socio-environmental or internal e.g. mood, craving, feeling addicted. Of 36 adolescents (58 % female, 22% African American, mean age 15.9 SD 1.5 years) 64% reported internal (mainly addiction) and 36% reported socio-environmental (mainly peer influence) as main reasons for relapse. Analyses using t-test revealed that adolescents reporting internal reasons for relapse as compared to their counterparts reporting external reasons for relapse had significantly higher cigarette consumption (p<0.049), reported significantly higher number of past quit attempts (p<0.0001), longer duration of last quit attempt (0.0001). These preliminary findings might inform components of post-cessation treatment approaches used to facilitate adolescent relapse prevention.

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POS1-39 RECRUITING TARGETED TEENS INTO A LONGITUDINAL STUDY OF SMOKING TRAJECTORIES: WHO PARTICIPATES?

Kathleen R. Divia, Ph.D.*, Robin J. Meremelstein, Ph.D., Susan J. Curry, Ph.D., Richard T. Campbell, Ph.D., Don Hedeker, Ph.D, Jon D. Kassel, Ph.D., and Lauren S. Wakschlag, Ph.D., University of Illinois at Chicago

Recruiting “high risk” teens for smoking research is challenging, particularly for studies using intensive measurements. This paper reports predictors of recruitment for a study in which teens and their parents agree to participate in a three-year longitudinal study using questionnaires and interviews and also agree up-front to possibly participate in up to 2 of 3 substudies utilizing intensive measurements: (1) 7-day ecological momentary assessments; (2) videotaped family discussions about family life and smoking; and (3) psychophysiological assessments of smoking in the lab. The design required achieving a sample of teens that was highly comprised of experimental smokers (46% “experimenters”), not reflective of the actual population distribution of smoking stages. To identify teens to recruit, we administered brief surveys of demographics, smoking history, and family and friends’ smoking to entire classes of 9th and 10th graders at 16 schools (N=12,970). Based on their responses, 3,654 students (never smokers, former experimenters, current experimenters, and regular smokers) were invited to participate; of these, 36.8% were willing. Females were significantly more willing to participate than males (40.1% vs. 33.5%), as were 9th graders vs 10th graders (41.1% vs. 34.6%). There were significant racial/ethnic differences with 37.4% of Whites, 44.3% of Blacks, 28.8% of Hispanics, and 29.2% of Asians being willing to participate. Response did not vary by teen or parent smoking status. School was a significant factor, with rates ranging from 18.5% to 48.0%. Multivariate analyses revealed gender, race, and grade were significant predictors of willingness to participate. Challenges and solutions for recruitment of teens into studies using both targeted distributions and intensive measures will be discussed.

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POS1-40 FIDELITY OF IMPLEMENTATION AMONG COMMUNITY-BASED YOUTH CESSION PROGRAMS

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Most youth quit attempts occur without use of evidence-based cessation treatment. Reviews of efficacy trials conclude that treatment improves quit rates, but study treatments typically adhere strictly to intervention protocols. Little is known about the extent to which community-based programs adhere to their planned implementation, how they may deviate, and why changes occur in front-line practice. The Helping Young Smokers Quit project is evaluating 41 community-based, group-based youth smoking cessation programs, across the United States. Program materials were abstracted prior to the evaluation to assess program as planned. 80 providers (100%) were interviewed at the end of their programs and reported on program as implemented. Results show deviations in recruitment strategies, program format, and program content. With regard to recruitment, over 80% planned to use flyers, while only 60%; nearly 50% planned to use newspaper notices, but <9% did; nearly 90% planned to use referrals from adults, <60% did; 22% planned to use peer outreach, and over 32% actually did. Commonly cited reasons for deviating from planned recruitment strategies included increased mandatory enrollment and the expense of planned strategies. For most programs, the planned and actual number of sessions and length of sessions were equivalent, but there were large deviations in the use of adjuncts to the group sessions. Only 5% of providers planned to refer participants to Internet quit sites, but nearly 40% did; fewer than 9% planned to refer to quitlines, and 47% did. Reasons for the changes included teen demand and new information about these resources. Programs largely adhered to their planned smoking-related curriculum, but many programs reported they added material on youth-related issues: 30% planned to address depression, and in practice 54% did; 58% planned to address self-esteem, and 78% did; 26% planned to address employment issues, and 46% did; 45% planned to address alcohol use, and 80% did. The relationship between fidelity to planned implementation and intermediate outcomes such as attendance, retention and youth and provider satisfaction will be presented.

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POS1-41 ADOLESCENT WITHDRAWAL EXPERIENCES IN RESPONSE TO ACUTE TOBACCO ABSTINENCE AND DURING FOUR WEEKS OF CESSION

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There is very little information on the biological, physiological, and psychological changes produced during abstinence from tobacco in adolescent smokers. This poster presents preliminary results from two studies: (1) a study of acute tobacco abstinence effects in a 48-hour lab study comparing adolescent smokers with non-smokers (N=101); and (2) tobacco withdrawal symptoms over the course of a 4 week intervention with adolescent smokers (N=54). In the first study, smokers were distinguished from non-smokers by higher levels of total withdrawal symptoms (F(1,99)=7.35, p<0.0001) and smokers reported significantly higher levels of symptoms that peaked within 24 hours of withdrawal and then displayed a downward trend in symptoms (F(1,99)=28.02, p<0.05). There were no differences in the course of acute symptoms between boys and girls, or heavy and light smokers. In the second study, abstinent smokers experienced a decline in total withdrawal symptoms across the weeks of treatment (F=4.71, p=0.002), however a significant interaction between gender and time (F=2.84, p<0.02), revealed that while girls appeared to have a peak in symptoms at day 7, which then declined over the following weeks of treatment, men appeared to have fairly consistent levels of symptoms across the weeks. These gender differences were also illustrated in ratings of cravings (F=2.75, p=0.03); specifically, women experienced consistent reduction in cravings over the weeks of treatment, while men’s craving rates increased over time. Results suggest that adolescents do experience significant withdrawal symptoms both acutely and over time in response to tobacco abstinence, which may impact daily functioning during school hours. In addition, gender differences in experiences of cravings and withdrawals may be late in emerging, which has particular treatment implications. Further implications and limitations are discussed.

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POS1-42 DOES ADOLESCENT SMOKING REDUCTION INFLUENCE CESSION EFFORTS?

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The potential effect of smoking reduction on cessation efforts has received growing attention. However, little is known about this issue among adolescent smokers. The present study is an initial investigation of adolescent smoking reduction effects on the relationships with subsequent cessation efforts. Based on results from adult studies, it was hypothesized that (a) those who reduce smoking will be more likely to attempt cessation, and (b) reducers who report greater decreases will be more likely to attempt cessation and report longer abstinence duration. Included in the present study were 109 participants in a longitudinal investigation of adolescent smoking self-change, 56% female, 71% White, on average 16.8 years old. Teens completed baseline and 6-month follow-up assessments. Past year attempts at reducing smoking were assessed at baseline and examined in relation to cessation attempts reported at the follow-up interview. 73% of participants reported a post-year reduction attempt, with the majority reporting multiple (>2) attempts. Reducers tended to be younger than non-reducers (p<0.08), but did not differ on gender, ethnicity or nicotine dependence (mFTQ). Self-reported duration of most recent reduction ranged from 0 to 300 days (median = 14). 40% of reducers smoked less often, averaging a 52% reduction in days smoked per week. 82% cut down on cigarettes, averaging a 57% fewer per day. 98 teens completed follow-up interviews, of whom 44 (45%) reported a cessation attempt. No relationship was observed between having tried to reduce prior to baseline and subsequent cessation attempts. Similarly, extent of reduction was not associated with attempting to quit or length of abstinence. Findings from this present study provide initial evidence that adolescent smokers frequently attempt reduction, however these efforts are often short-lived. In contrast with adults, no relationship was found between adolescent reduction attempts and subsequent smoking cessation efforts. Additional research is needed to clarify the nature of adolescent smoking reduction and further examine its influence on the cessation process.

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**POS1-43**

MENTHOL PREFERENCE PERSISTENCE AND QUIT ATTEMPTS IN ADOLESCENT CIGARETTE SMOKERS

Charles S. Collins, B.A., B.S.W., Maria Jaszyna-Gasior, M.D., Ph.D., Lindsay A. Garver, B.S., Chelsea Wieczorek, B.S., Michelle Leff, M.D., Eric T. Moolchan, M.D.*

Several studies suggest menthol smoking might be associated with increased addictiveness compared to non-menthol smoking. Our aim was to examine the persistence of adolescent preference for mentholated compared to non-mentholated cigarettes and to compare number and longest duration of quit attempts in these two groups. Adolescent smokers (n=647; 48.7% African American; 48.4% Caucasian; 62% Female; 15.8 yrs old, SD 8.01; mean FTND 5.5 SD 2.3) seeking to participate in a cessation trial completed a telephone interview in which brand preference, brand of first cigarette and number of quit attempt data was collected. Based on data assessing first cigarette vs. current cigarette brand, significantly more change in brand preference occurred in non-menthol smokers (to menthol brands) than the converse (p<0.001). There was no association between menthol smoking and having made a prior quit attempt (86.7% of menthol smokers and 88.0% non menthol smokers had tried to quit before; chiSq(1)=0.16, p=0.69). For participants whom we had data on both menthol preference and quit attempts, the number of prior quit attempts was not significantly different (3.8 ± 0.2 Menthol, 6.7 ± 3.1 non-menthol, p=0.36) but, the mean longest duration quit attempt was significantly longer among menthol smokers (4.2 ± 0.6 days compared to 2.2 ± 0.2 days; p=0.0021). These data indicate greater persistence in menthol brand preference in this dependendent sample of adolescent smokers. Further research should explore the determinants (e.g., marketing, sensorial, nicotine-related, harm perception) of the role of menthol in the maintenance of adolescent smoking behavior.

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**POS1-44**

RELIGIOUS PROHIBITIONS AGAINST CIGARETTE SMOKING, ETHNICITY, AND THE ODDS OF TOBACCO USE AMONG ADOLESCENTS


Emerging research has suggested that spiritual beliefs may play a protective role in preventing the uptake of cigarette smoking among adolescents. It has further been suggested that this construct may be more influential for African American youth than for Caucasians. However, the exact nature of the construct has not been well specified. Some researchers have asked about teens’ general commitment to religion, whereas others have focused on time spent in religious activities. In this study, we assessed in grade 9, teens’ perception that their religious beliefs were inconsistent with smoking. Our data were derived from The Memphis Health Project, a longitudinal study of smoking onset in a biethnic cohort of approximately 7,000 students recruited in the seventh grade. During the 4th year of the study (tenth grade for most students), the youth were asked whether they had any religious beliefs against smoking. A four-point Likert response scale was used, with options ranging from “1 have very strong religious beliefs against smoking” to “2 I do not have religious beliefs against smoking.” Cigarette smoking was assessed by self-report, and a range of other variables was measured, using a procedure detailed elsewhere. Logistic regression was used to determine whether religious prohibitions were associated with smoking status measured concurrently. In addition, ethnicity (African American vs. Caucasian) and its interaction with religious beliefs were entered into the equation. Results indicated that Caucasian teens were over three times more likely than African American youth to be current smokers. Further, for each point increase in religious beliefs against smoking, students became 28% less likely to smoke. Finally, there was a statistically significant interaction of ethnicity and religious prohibitions against smoking. Follow-up analysis revealed that both African American and Caucasian youth were less likely to smoke when they had religious beliefs inconsistent with tobacco use, but the effect of religious prohibitions was more pronounced for Caucasian adolescents. The implications of these findings are explored.

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**POS1-45**

SMOKE, IN MY EYES — A QUALITATIVE RESEARCH PROJECT WITH YOUNG WOMEN THAT SMOKE

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This paper provides an overview of a qualitative research project conducted with female smokers aged 16 to 19 in Toronto, Canada. To contribute to the growing knowledge-base on the social context of youth smoking, this project sought to address the problem of female adolescent tobacco use through a substantive focus on the roles of gender and youth cultures in shaping smoking practices. Drawing from the work of social theorist Pierre Bourdieu, this project was also a preliminary attempt to critically theorize young women’s smoking as a practice with a deeper meaning for the structure and nature of their social location or habitus. Through a qualitative method of key theoretical concepts including of collective lifestyles, cultural capital, and symbolic violence, Bourdieu’s theoretical perspective is put forth as an innovative model for thinking sociologically about the reasons for young women’s tobacco use. In addition to in-depth, one-to-one interviews (n=25), this project employed a participant-driven photographic methodology that allowed young women to construct and interpret images of their tobacco use, supplementing traditional narrative approaches with pictures and captions detailing smoking fits into their everyday lives. While many of the basic coping and social functions that smoking fulfills for young women closely parallel those of adult smokers, the results of this research suggest that tobacco use also functions as a form of “survival strategy” employed in the face of age and gender-based adversity. Not only did this project have the benefit of leading participants to reflect on the reasons why they smoke, but it also provided new insights about the roles and functions of smoking in young women’s lives that can be used to develop an approach to tobacco prevention and intervention efforts that is truly youth or “girl-centered.” This unique combination of methodologies allowed for a much richer understanding of the social context of adolescent smoking, and suggested that in order to effectively address tobacco use amongst young women, smoking must be understood as an inherently social practice that is linked to where, how and with whom they smoke.

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**POS1-46**

STRESSFUL LIFE EVENTS AND SMOKING BEHAVIORS IN CHINESE ADOLESCENTS: A LONGITUDINAL ANALYSIS

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The associations between stressful life events and adolescent smoking have been established among adolescents in the United States. However whether these relationships are similar in adolescents from other non-Western cultures is unknown. Understanding these relationships in adolescents may help to provide opportunities to reduce the smoking rates in those cultures by providing positive coping methods which do not include smoking. In this longitudinal study of Chinese adolescents. Six of these scales, Positive School-related, Negative School-related, Positive Family-related, Positive Peer-related, Negative Peer-related, and Negative Health-related, are significantly different means among females and males. Among males, positive school-related stress was a protective factor for smoking susceptibility. Among females, positive school-related stress was a protective factor and negative school-related stress was a risk factor for lifetime smoking, and negative family-related stress was a risk factor for smoking susceptibility. Findings implicate that smoking among male adolescents in China may not be the result of stress; however, in females stress may contribute to the decision to smoke. Future directions are discussed.

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POS1-47 PREGNANCY SMOKING CESSATION: THE ROLE OF INTIMATE PARTNER VIOLENCE
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Background: Pregnancy smoking has deleterious consequences for both the smokers and their unborn children. Despite the known risks and available interventions, a substantial number of women continue to smoke during pregnancy. Research has identified many maternal characteristics associated with failure to stop smoking during pregnancy.

Objective: The goal of the current study was to examine the association between the experience and level of different types of intimate partner violence (IPV) during pregnancy and smoking cessation. Methods: Pregnant smokers were recruited from a family practice center where they received prenatal care and completed three trimester interviews that included measures of smoking and IPV. Prenatal medical charts were also reviewed.

Results: Data were available for 107 women. Participants were predominantly Caucasian (99%), unmarried (61%), and lower SES (73% on Medicaid or uninsured), 65% had family incomes <$15,000. Only 39% of participants successfully quit smoking, however, 43% reduced smoking by at least 1/4 pack/day. More than 70% of women reported psychological abuse from their partner at some point during pregnancy, 26% reported physical abuse, and 33% reported verbal abuse severe enough to require medical treatment. Pregnancy smoking cessation and IPV were significantly related. Women who continued to smoke, compared with those who quit, were more than twice as likely to have been sexually abused (22% vs. 10%) and more than five times as likely to have been injured from physical abuse (11% vs. 2%). Further, with respect to level of IPV, those continuing to smoke reported significantly more physical, sexual, and injury victimization than those who quit (p's<.05). Relationships persisted after controlling for potentially confounding factors. Psychological victimization was not significantly related to pregnancy smoking cessation.

Conclusions: The experience of IPV substantially increases the risk of continued pregnancy smoking. Smoking cessation efforts with pregnant women should recognize and address the potential roles of IPV and other life stressors in cessation efforts and success.

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POS1-48 SMOKING AND PREGNANCY: DISCREPANCIES BETWEEN MATERNAL REPORTS OF SMOKING AT DIFFERENT TIME POINTS AND MEDICAL RECORDS
Mary Ellen Lynch, Ph.D., Julie A. Carroll, M.S.W.*, Julie Kable, Ph.D., and Claire Coles, Ph.D., Emory University School of Medicine

Smoking cigarettes during pregnancy has been linked to negative outcomes for children including low birth weight and increased risk for spontaneous abortion, congenital heart disease, and Sudden Infant Death Syndrome. Due to the stigma associated with smoking during pregnancy, some women may not feel comfortable admitting that they smoke to healthcare providers. Current estimates suggest that 25% of women of childbearing age smoke cigarettes, but this is not reflected in the perceptions of those providing care to pregnant women. This analysis is a comparison of reports of smoking before and during pregnancy from maternal interviews after birth, hospital medical records, and a maternal interview six months postpartum. 351 mothers were recruited postnatally in a hospital in Atlanta and interviewed concerning their tobacco use before and during pregnancy; 190 were interviewed retrospectively six months later. Information on tobacco use was abstracted from hospital medical records. Information on smoking from hospital interviews and medical records was significantly different on smoking prior to pregnancy (X 2 (1)=25.238, p<.001) and during the third trimester (X 2 (1)=200.699, p<.001). For prior to pregnancy, 6.6% of mothers reported smoking in the interview, but not in the medical records. For third trimester, 12% of mothers reported smoking in the interview, but not in the medical records; 8.6% denied smoking in the interview, but were listed as smoking in the medical records. When six month retrospective reports were examined in relation to hospital responses, there also were significant differences for prior to pregnancy (X 2 (1)=134.533, p<.001) and first trimester (X 2 (1)=112.838, p<.001). The most notable finding was that, for third trimester, 19% who reported that they stopped smoking in the hospital interview responded during this time six months later. 4.9% reported smoking six months later, but had not reported this at the hospital. These results suggest that maternal self report and medical records may not be consistent. Retrospective recall at six months postpartum may be less accurate than hospital interview responses.

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POS1-49 SYSTEMS TO ENHANCE TOBACCO TREATMENT SERVICES FOR PREGNANT WOMEN: RESULTS FROM THE SMOKE-FREE FAMILIES PREGNATAL DEMONSTRATION PROJECTS
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The Smoke-Free Families Prenatal Demonstration Projects were a collaborative effort between staff at the National Dissemination Office (NDO) and three grantees organizations in Oregon, Maine, and Oklahoma. The purpose was to implement systems-level changes to enhance delivery of the 5 A’s in the prenatal care setting. As part of the overall evaluation, the NDO measured changes in institutional support for prenatal smoking cessation within the three health care systems. We used a standardized evaluation tool called the “Assessment of Chronic Illness Care” (ACIC), which includes factors related to the healthcare delivery system, community linkages, self management support, decision support, system design, and clinical information systems. We modified the tool for prenatal tobacco treatment and added open-ended questions to the 11-point scale. Data collection occurred six months after program implementation, and was repeated twelve months later. Phone interviews were conducted with Steering Committee members and representatives from the grantee organizations, known as the Leadership Team. Descriptive statistics were calculated to assess the level of support for cessation services, and qualitative methods were used to synthesize common themes and define the specific implementation strategies. The results revealed that six months after project initiation, there was already a good infrastructure in place for smoking cessation services across all three demonstration sites. For the Steering Committee respondents, only one of the eleven factors (incentives) fell below the “Good Support” category. For the Leadership Teams, four of the eight factors were in the “Full Support” category. Interestingly, there were minimal changes in the ACIC scores between Time 1 and Time 2. For the qualitative data, over thirty distinct implementation strategies were identified in the three projects. Each strategy could be linked back to one of the recommended systems changes from the standardized assessment tool. This tool may be used by other tobacco-related organizations that are interested in measuring systems-level changes as part of a comprehensive program evaluation.

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POS1-50 THE NATIONAL PARTNERSHIP TO HELP PREGNANT SMOKERS QUIT IMPACT EVALUATION: WHO HAVE WE REACHED?
Leah Ranney, Ph.D.*, Lauren DiBiase, M.S., Cathy Melvin, Ph.D., M.P.H.

Launched in May 2002, the National Partnership to Help Pregnant Smokers Quit (National Partnership) is a diverse coalition of over 60 leading philanthropic, health, business and government organizations dedicated to help every pregnant woman in the United States become smoke-free. Five working groups—healthcare, policy, research, communities and worksites, and state outreach—of representatives from partner organizations plan and implement system-wide clinical and community-based strategies outlined in the National Partnership Action Plan. Representatives identified a core set of objectives for each working group and established benchmarks to gauge the progress towards these objectives. Activities aimed at achieving the benchmarks are developed and executed through monthly teleconferences, emails, and periodic in-person meetings. This presentation will provide updates on the progress and accomplishments of the National Partnership, and specifically how its work has influenced policy, providers, and pregnant smokers. Impact data will demonstrate the activities undertaken by the National Partnership have reached thousands of pregnant smokers, providers, and other stakeholders. The National Partnership exemplifies what can be achieved through a large, national collaboration with shared goals. Activities discussed include the process, product development, dissemination, and evaluation. In addition, strategies to address challenges in meeting benchmarks will be described.

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POS1-51 
PREGNETS (NETWORK FOR THE PREVENTION OF GESTATIONAL AND NEONATAL EXPOSURE TO TOBACCO SMOKE) II: SUPPORTING PRE-NATAL NUTRITION PROGRAMS IN THE INTEGRATION OF SMOKE FREE INTERVENTIONS

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Background: Clinical practice guidelines identify screening for tobacco use as the single most important step in addressing tobacco use dependence. Special populations such as pregnant women are candidates for additional information about risks associated with smoking and benefits of quitting. Also, literature on health professionals practice consistency shows that single-event training workshops do not produce lasting changes in practice.

Method: PREGNETS (delivers training to health professionals and supports pregnant smokers aiming to reduce smoking) & AWARE (provides direct contact with low-income pregnant smokers and ensures that the voices of these women were represented) held a training workshop on smoking interventions for Canada Prenatal Nutrition Program (CPNP) (provides nutritional support and health information to pregnant women) staff (N = 13). Following training, PREGNETS & AWARE hosted teleconference discussion groups open to all CPNP staff to support transfer of new knowledge into practice. An average of 8 (range=7-10) individuals participated in 3 monthly sessions.

Results: At follow-up (N=12), 83% of respondents who took part in the teleconferences reported that they were useful and 75% of respondents said they would continue to participate if given the opportunity. The main reasons for not participating in the teleconferences were lack of time and having few smokers in the CPNP project. Qualitative information from the follow up questionnaire will be presented. Ongoing consultations with CPNP staff kept project staff informed of real world implementation issues. Discussion group participants reported that the addition of second-hand smoke reduction messages was helpful in “keeping the conversation going” with pregnant smokers who were unwilling to quit at initial screening and as a tool to re-engage them in discussions about smoking at subsequent visits. This information was invaluable to project staff in planning and development of a revised curriculum.

Implications: Integration of smoking cessation into programs for pregnant women requires training and ongoing involvement of program staff.

Limitations: small sample size.

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POS1-52 
ARE SMOKERS ONLY USING CIGARETTES? EXPLORING CURRENT POLYTOBACCO USE AMONG AN ADULT POPULATION

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Background: The primary focus of prevention and cessation interventions has been on cigarette smoking, but other forms of tobacco use also have adverse health effects. Polytobacco use, which we defined as the concurrent use of cigarettes with one or more other tobacco product(s), may present additional health risks and make cessation more difficult. There is limited information, however, on the prevalence of polytobacco use and factors associated with it among adults.

Methods: Data were obtained from over 50,000 persons aged >=18 years from 10 states who answered an optional set of tobacco product use questions on cigarettes, smokeless tobacco, cigars, pipes, and bidis in the 2003 Behavioral Risk Factor Surveillance System (BRFSS). Overall and demographic-specific population estimates of current product use and of current polytobacco use, defined as being a current cigarette smoker and a current user of at least one of the other four tobacco products, were determined. Logistic regression analyses were used to determine factors independently associated with polytobacco use among men.

Results: The overall adult prevalence was 22.4% for cigarettes, 5.7% for cigars, 3.5% for smokeless tobacco, 0.9% for pipes, 0.3% for bidis, and 3.4% for polytobacco use. Polytobacco use was more common among men who smoked cigarettes, with 26.0% using at least one other product, compared to 4.4% of women cigarette smokers. Polytobacco use among men was significantly associated with younger age, all races/ethnicities except Hispanic, less educational attainment, less income, and heavy alcohol use.

Conclusions: Among men who smoked cigarettes, one out of four used at least one other tobacco product. Tobacco control practitioners need to consider that many male cigarette smokers, particularly young males and males who are heavy alcohol users, are also current users of other tobacco products. Prevention and cessation efforts may need to be targeted beyond cigarette use and consider other forms of tobacco.

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POS1-53 
THE NICOTINE DELIVERY, CARDIOVASCULAR PROFILE, AND SUBJECTIVE EFFECTS OF AN ORAL TOBACCO PRODUCT FOR SMOKERS

Thomas Eisenberg, Ph.D.*, and Cindy Sams, R.N., Virginia Commonwealth University

The tobacco industry markets potential reduced exposure products (PREPs) to smokers. Some PREPs are oral products that are intended to substitute for cigarettes. For example, Ariva, marketed by Star Scientific, is a mint-like tablet that is made from compressed tobacco powder and is intended for “adult smokers in situations where they cannot or choose not to smoke.” Few objective data are available regarding the health effects, including nicotine delivery, cardiovascular profile, or subjective effects of this new product. In this study, we examined the oral tablet in a 10-night-obstructive cigarette smokers were administered 1 Ariva tablet, followed 90 minutes later by 2 Ariva tablets, followed 90 minutes later by 3 Ariva tablets. Participants allowed each dose to dissolve in their mouths according to package instructions. Blood was sampled, heart rate monitored, and subjective effects assessed regularly throughout the session. Results showed that Ariva delivers nicotine in a dose-dependent manner: mean plasma nicotine level at baseline was 2.4 mg/ml, and mean peak level after 1 tablet was 4.1 mg/ml, after 2 tablets was 8.0 mg/ml, and after 3 tablets was 11.1 mg/ml. Ariva is a safe but reliable heat-derived product. The tablets also produced dose-related decreases in ratings of urge to smoke, and increases in ratings of nausea (i.e., on a 0-100 scale, nausea increased from a mean of 3.9 at baseline to 26.3 after 1, 33.7 after 2, and 36.9 after 3 tablets). Overall, based on this short-term laboratory evaluation, Ariva exposes users to nicotine and may suppress some symptoms of tobacco abstinence; its nausea-inducing characteristics may limit acceptability.

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POS1-54 
FACTORS ASSOCIATED WITH SALIVARY COTININE AMONG MEN ENROLLED IN A SMOKELESS TOBACCO CESATION PROGRAM

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Purpose: The objective of the analyses presented in this abstract were to describe demographic, tobacco-related, and psychosocial factors related to baseline salivary cotinine concentration in a group of men enrolled in a smokeless tobacco (ST) cessation study in Appalachia, Ohio.

Methods: Men who were daily users of ST were eligible to participate in the ST cessation program. All participants were recruited through ad placement at community agencies. At baseline a questionnaire, which included a modified Fagerström Test of Nicotine Dependence (FTND) scale, was administered and a saliva sample was obtained from the participant. A linear regression analysis was performed to determine which factors were associated with salivary cotinine among all men using ST and among snuff only users.

Conclusions: 256 men completed the baseline assessment: the average age was 34 years, 15% had not received a high school diploma, 68% were married, and 28% were unemployed. With respect to ST use, 24% of the men were under the age of 10 when they started using ST regularly, 16% smoked in addition to daily ST, 88% used snuff only, and 57.1% had made at least one quit attempt in the past year. Among the snuff users, the two most popular brands were Copenhagen (40%) and Skoal (28%). The median cotinine level was 480 (range 17-2469). The results from the multiple regression model indicate that occupation, quit attempts, years of ST use, and tobacco dependence were significantly associated with salivary cotinine levels (adjusted R2 = 0.24). Concentrations were significantly higher among users who were skilled laborers, had no quit attempts in the previous year, used ST for 20 years or more, and had higher FTND scores. Among the 199 snuff only users, cotinine concentration was positively related to age, no quit attempts, FTND score, and use of Copenhagen (adjusted R2 = 0.29).

Conclusion: Knowledge of the factors associated with ST dependence, as measured by salivary cotinine, is crucial for developing effective interventions. This study adds to the literature on correlates of cotinine and dependence among ST users.

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POS1-55 HOW MANY ADOLESCENTS ARE USING CIGARETTES AND OTHER TOBACCO PRODUCTS? THE NEED TO MONITOR POLYTOBACCO USE AMONG YOUTH

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Background: The use of individual tobacco products among adolescents has been well documented. However, there has been little attention given to concurrent use of cigarettes and other tobacco products among youth, or polytobacco use. It is unknown what the burden of polytobacco use is among youth.

Methods: We combined the 2002 and 2004 National Youth Tobacco Survey (NYTS) for our analysis. The NYTS data was designed to provide nationally representative data for middle and high school students in grades 6 to 12. Overall, and demo-graphic-specific population estimates of current cigarette use and current polytobacco use, defined as being a current cigarette smoker and a current user of cigars, smokeless tobacco, pipes, bids, and/or kreteks, were determined.

Results: The overall prevalence was 16.2% for cigarettes, Among adolescent cigarette smokers, 46.5% were polytobacco users, with most using 1 or 2 other tobacco products. Polytobacco use was more common among male cigarette smokers (62.4%), though prevalence was also high among female cigarette smokers (31.2%). The prevalence of polytobacco use among cigarette smokers was 49.4% for middle school students and 45.4% for high school students. Among all adolescents using cigarettes and 1 other tobacco product, the most popular combination was cigarettes and cigars (68.0%), followed by cigarettes and smokeless tobacco (17.2%), cigarettes and kreteks (6.1%), cigarettes and bids (4.7%) and cigarettes and pipes (4.0%).

Conclusions: Almost half of all adolescent cigarette smokers used other tobacco products. About half of both middle and high school student smokers were polytobacco users. Interventions that focus on individual tobacco product use may not be effective, given the level of polytobacco use among youth.

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POS1-56 SMOKLESS TOBACCO: USE AND PERCEIVED RISKS IN CANADA

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Smokeless tobacco products are imported into Canada, primarily from the U.S. and do not have a high prevalence of use. In 2006, 86% of the Canadian population, 15 years and older, had heard of chewing tobacco whereas only 22% had heard of nasal and oral snuff. In 2005, 28 smokeless tobacco brands were offered for sale across the country and sales, which increased in the late 1990s, were lower in this year than they were in 2001. One province, Alberta, outstrips all others when it comes to sales volume, almost twice as much smokeless tobacco is sold in this province compared to all others. According to the Canadian Tobacco Use Monitoring Survey (CTUMS) from 1999 to 2005, trends in ever trying smokeless tobacco products among Canadians 15 years and older have remained stable over time with 8% reporting ever use in 1999 and 7% in 2005. Among ever users, reported use of smokeless tobacco in the past 30 days has also not changed over time and is estimated to be 7% in 2005. This translates to less than 1% of the population 15 years and older are current users of these products. Males are more likely than females to report ever trying smokeless tobacco products (OR=2.20, p<0.001) and 30 day use (OR=2.62, p<0.001). Ever trying smokeless tobacco products peaked among 20 to 24 years olds (15-19 years 7%, 20-24 years 12% and 25-34 years 10%), however, the highest prevalence of past 30 day use (26%) shifted to youth (15-19 years). This is twice the rate reported by any other age group. Canadians were confused about the harm associated with smokeless and smoke tobacco products. Approximately two-thirds of Canadians thinking chewing tobacco or snuff would cause the same amount of harm as smoking tobacco cigarettes and there is little reported interest in trying or using either of these products. Although smokeless tobacco poses a number of health risks, use of this product is notably lower than other alternative smoke products used in the past 30 days (12% cigars and cigarillos and 6% who use marijuana at least once a month).

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POS1-57 FACTORS ASSOCIATED WITH SMOKLESS TOBACCO CESSATION IN AN APPALACHIAN POPULATION

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Smokeless tobacco (ST) use increases the risk of oral pathologies, cardiovascular disease, and cancer. Understanding what factors are associated with successful tobacco quit attempts may help in the development and targeting of effective cessation strategies. The bulk of tobacco control efforts have focused on smoking. This paper aims to describe factors associated with ST cessation and to compare these results to findings from smoking cessation research.

Participants: ST users who were 19 to 70, from an Appalachian Ohio county and participating in an ST cessation program were used to examine correlates of successful ST cessation at 1 year post-intervention. Saliva samples were tested for the biomarker cotinine to confirm tobacco usage. A total of 25 men (21.6%) and 14 women (20.5%) were included in the analysis, ranging in age from 19 to 70, from an Appalachian Ohio county and participating in an ST cessation program.

Conclusions: Almost half of all adolescent cigarette smokers used other tobacco products. Polytobacco use was more common among male cigarette smokers (62.4%), though prevalence was also high among female cigarette smokers (31.2%). The prevalence of polytobacco use among cigarette smokers was 49.4% for middle school students and 45.4% for high school students. Among all adolescents using cigarettes and 1 other tobacco product, the most popular combination was cigarettes and cigars (68.0%), followed by cigarettes and smokeless tobacco (17.2%), cigarettes and kreteks (6.1%), cigarettes and bids (4.7%) and cigarettes and pipes (4.0%).

Conclusions: Almost half of all adolescent cigarette smokers used other tobacco products. About half of both middle and high school student smokers were polytobacco users. Interventions that focus on individual tobacco product use may not be effective, given the level of polytobacco use among youth.

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POS1-57 CHARACTERISTICS OF AMERICAN WATERPIPE USERS: A PRELIMINARY REPORT

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Waterpipe smoking, a traditional tobacco use method in the Middle East and Indian subcontinent, has experienced a resurgence of use in recent years. Despite growing evidence of its dependence potential and health-damaging effects, waterpipe has spread beyond its traditional regions of use to many other countries, including the United States. Because very little is known about waterpipe use in the U.S., we surveyed convenience samples of users drawn from two U.S. cities, Richmond (n=109) and Memphis (n=34). Users in both cities were primarily young adults, a majority (75%) were men, and most were college students or had a college degree. Initial and current use usually occurred in a social context, with groups of friends smoking in a café/restaurant or at home. Most users had smoked waterpipe for two or fewer years and currently smoked at least once a month; 22% smoked at least once per week and 10% daily. Greater frequency of use was associated with a younger age at first use, owning one’s own waterpipe, use occurring primarily with groups of friends, and the perception of being “hooked.” Most users believed waterpipe was less addictive and harmful than cigarette smoking, believed they could quit use at any time, but had no plans or desire to quit. A majority of users also used other tobacco products such as cigarettes, and those who did not smoke cigarettes were highly likely to intend to initiate cigarette use in the next year. Results indicate that waterpipe users in the U.S. are young and educated, tend to experiment with multiple forms of tobacco, and at risk of becoming cigarette smokers, are unaware of the potentially harmful and addictive properties of waterpipe use, and plan to continue use in the future. Educational efforts are needed to increase awareness of the potential hazards of this increasingly popular form of tobacco use.

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Waterpipes are used to smoke sweetened and flavored tobacco that is heated by charcoal; smoke passes through water on its way to the user. Waterpipes have spread from other world regions to the U.S., especially college campuses: one study reports past 30-day waterpipe use as high as 15.3% among 411 Johns Hopkins University freshmen (Smith et al., 2006). Little is known about the prevalence of waterpipe use on campus, or about students’ knowledge, beliefs, and attitudes regarding this tobacco use method. To begin to address this gap, a survey was administered to Introductory Psychology students at Virginia Commonwealth University: 41 items covered demographics, general tobacco use, peer tobacco use, harm reduction, tobacco/nicotine regulation, risk perception, and smoke-free policies.

Of the 744 respondents, 93% were between 18-22 years old, 85% were women, 43% were non-white, and 92% were U.S. citizens. In the past year, 58% had smoked a cigarette, and 43% had used waterpipe. In the past 30 days, 41% reported cigarette smoking, while 20.3% reported waterpipe use. The 151 respondents who reported having used a waterpipe in the past 30 days were more likely to perceive waterpipe use as less harmful than cigarette smoking (i.e., 60% for users relative to 36% for non-users, p < .001). These data warn of high waterpipe use prevalence on U.S. college campuses, or about students’ knowledge, beliefs, and attitudes regarding this tobacco use method. To begin to address this gap, a survey was administered to Introductory Psychology students at Virginia Commonwealth University: 41 items covered demographics, general tobacco use, peer tobacco use, harm reduction, tobacco/nicotine regulation, risk perception, and smoke-free policies.

More detailed results will be presented, with an eye to characterizing waterpipe use for more study of this centuries-old tobacco use method.

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**POS1-60**

**WATERPIPE USE USERS’ KNOWLEDGE, BELIEFS, AND ATTITUDES**

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Virginia Commonwealth University, 1Princeton University, 2Syrian Center for Tobacco Studies, 3University of Memphis, 4Virginia Commonwealth University

Waterpipes are used to smoke sweetened and flavored tobacco that is heated by charcoal; smoke passes through water on its way to the user. Waterpipes have spread from other world regions to the U.S., where surveys indicate 15-20% of university students use them. Little is known about U.S. waterpipe users’ knowledge, beliefs, and attitudes regarding this tobacco use method. To begin to address this gap, a survey was administered to Introductory Psychology students at Virginia Commonwealth University: 41 items covered demographics, general tobacco use, peer tobacco use, harm reduction, tobacco/nicotine regulation, risk perception, and smoke-free policies.

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More detailed results will be presented, with an eye to characterizing waterpipe use for more study of this centuries-old tobacco use method.

Supported by PHS Grant R01CA103827.

**POS1-61**

**METHODS USED TO GIVE UP SMOKING ACCORDING TO GENDER**

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Introduction: The Company Medical Service of the Provincial Council in Lleida in collaboration with the Spanish Association against cancer in Lleida and the Safety and Health committee are interested in reducing tobacco consumption by the workers. That’s why a free and 80% subsidized treatment in work hours was offered. It was a group therapy and an individual one to support.

Objective: The objective was to study the differences in the methods used to give up smoking between men and women.

Materials and method: Data of age, gender and method used were written on anonymous questionnaires given to workers. N=200.

Results: 40% were men. 93.3% of men used just the willpower vs 58.3% of women. Group psychotherapy was used by 4.2% of women and by 0% of men. Nicotine chewing gums were used by 8.3% of women and 6.7% of men. 8.3% of women used acupuncture as method to give up smoking vs none of the men.

Conclusions: Willpower as the only method was more expressed by men: 93.3% of men vs 58.3% of women. Group psychotherapy, nicotine patches and acupuncture were more used by women.

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**POS1-62**

**COMPARING THE CHARACTERISTICS OF ADOLESCENT SMOKERS TO ADULT SMOKERS WHO PARTICIPATED IN A SMOKING CESSATION CAMPAIGN IN SÃO PAULO CITY**

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Since 1993 the Heart Institute (INCOR), has been celebrating the World No Tobacco Day.

Objectives: Our goal in this health counseling campaign was to compare the nicotine dependence and motivation to quit between adolescent smokers and adult smokers.

Methods: The campaign was simultaneously held in six different places in São Paulo city in order to attract smokers from different neighborhoods. We evaluated nicotine dependence through Fagerström Test and motivation to quit through: how long have been willing to quit, willingness to make a quit attempt, readiness to set a date to quit and previous quit attempt.

Results: We evaluated 3,864 smokers; 191(5%) adolescents: 55.5% male, 44.5% female, age 18±1.45, (minimum 14/ maximum 20 years old), and 3,673 (95%) adults: 51.6% male, 48.4% female, 41.07±13.06 years old. According to nicotine dependence: adult’s Fagerström score was 5.11±2.55 and adolescent’s was 4.1±2.4, 72.3% of adults and 56% of adolescents smoked their first cigarette within 30 minutes after waking up, 43.1% of adults and 45.5% of adolescents found hard not to smoke where smoking is not allowed, 48.9% of adults and 42.4% of adolescents found hardest to give up the first cigarette; 28.2% of adults and 44.6% of adolescents smoked less than 10, 42.9% of adults and 35.6% of adolescents smoked 11 to 20, 19.2% of adults and 13.1% of adolescents smoked 21 to 30, 10.2% of adults and 3.7% of adolescents smoked more than 31 cigarettes per day; 51.4% of adults and 35.6% of adolescents smoked more during the morning. 57.1% of adults and 55% of adolescents smoked even when sick; According to motivation to quit: 64.5% of adults and 34.2% of adolescents had been thinking about quit for more than a year, 61.8% of adults and 48.1% of adolescents were willing to make a quit attempt in the next 30 days, 61.9% of adults and 46.6% of adolescents were ready to set a date to quit, 58.8% of adults and 55% of adolescents reported at least one previous quit attempt.

Conclusion: There were significant differences between nicotine dependence and motivation to quit of adolescent smokers and adult smokers.

This study was supported by Pfizer.

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POS1-63** ADOLESCENTS’ EVALUATIONS OF SMOKING CESSATION PROGRAM COMPONENTS: WHAT GETS THEIR ATTENTION?**


Many programs for helping teens quit smoking have been developed, but their outcomes have been disappointing. Given the benefits of quit programs for adults, it is not clear why programs for teens are less effective. Differences in social reactions to quitting, withdrawal tolerance, and cognitive development could play a role. In addition, evaluation data on specific parts of teen quit programs are rare. It may be that some components are well-tailored to teens, but others do not address their needs.

In that case, the benefits of the better components may be washed out by the limitations of the weaker ones. To identify which components are most acceptable to teens, this study used a dismantling approach. Rather than presenting a complete program, we administered 14 teaching modules of 15-20 minutes each. Half of the modules aimed at increasing sustained motivation to quit, and half provided cessation strategies. Graduate students administered each, using a motivational interviewing framework. Some modules used familiar concepts, including the financial benefits of quitting, withdrawal effects, and stimulus control. Others were more novel, such as lessons on yoga, the effects of quitting on identity, and managing cessation within the family. After each module, teens completed a 12-item survey using 4-point Likert scales. For example, teens rated each module on whether it was easy to understand, motivated them to quit, was boring, or might lead students to smoke more. 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. Our results identified considerable variability in how teens viewed the modules. In this report, we present data on which modules were rated best and which were rejected. In addition, we explore gender and ethnic differences in teens’ perceptions of the utility and acceptability of the modules. These data will help researchers identify the most promising concepts to include in smoking cessation programs for teens.

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POS1-64** CONTINGENCY MANAGEMENT AND COGNITIVE BEHAVIORAL THERAPY FOR SMOKING CESSATION IN ADOLESCENT SMOKERS: COMPARISON OF TWO DIFFERENT CBT FORMATS**

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Our group is developing a high school-based smoking cessation program combining contingency management (CM) and cognitive behavioral therapy (CBT). The current pilot study evaluated the optimal format of CBT to use in this intervention. Thirty-four adolescent smokers participated in a four-week smoking cessation program in which they received CM with one of two formats of CBT: a standard weekly version (CBT) or a frequent brief behavioral intervention (FBBI). Results indicate a trend towards a higher 9-day point prevalence end of treatment abstinence rate (CBT=71.4 %, FBBI=61.2 %, p<.09) and percent days abstinent during treatment (CBT=57.1%, FBBI=38.5%, p=.11) in the CBT condition. In addition, 86% of CBT and 53% of FBBI participants completed treatment (p=.05). These preliminary results suggest that when combined with CM, the standard weekly format of CBT is more acceptable to adolescent smokers.

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POS1-65** PREDICTORS OF PARTICIPATION IN A SMOKING CESSATION PROGRAM AMONG YOUNG ADULT SMOKERS**

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Despite having the highest smoking prevalence of any adult age group, the desire to quit, and difficulty quitting, there do not appear to be smoking cessation programs that are directed toward young adult smokers. Therefore, it is unclear what factors influence the likelihood that a young adult smoker would participate in a formal smoking cessation program. This study investigated the predictors of participation in a smoking cessation trial for young adults’ ages 18–30 years old. Eligible smokers (n=164) completed a telephone survey that measured demographic, smoking history, and psychosocial variables prior to the initiation of smoking cessation treatment. Young adult smokers who attended at least one smoking cessation session were compared to those who did not. Logistic regression indicated that race and education were the only statistically significant multivariate predictors of participation. Caucasians were over four times (OR=4.09, C.I.=1.78, 9.41) more likely to participate in the smoking cessation program compared to non-Caucasians (61% versus 19%). Young adults currently attending college or those that graduated college were over two times (OR=2.52, C.I.=1.04, 6.10) more likely to participate in the smoking cessation program compared to those with a high school education or less (56% versus 21%). Future research should investigate how to promote participation in smoking cessation programs among young adult non-Caucasian smokers and young adult smokers who are not in college to prevent a lifelong habit associated with disproportionate morbidity and mortality.

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POS1-66** EFFECTS OF FRONT-LOADED VS. STANDARD WEEKLY COUNSELING ON 6-MONTH ABstinence RATES**

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Those who try to quit smoking have a greater likelihood of long-term success if they are able to remain abstenient for the first 2 weeks of a quit attempt. Unfortunately, for most smokers who try to quit, relapse occurs very rapidly, with 60–70% relapsed by 2 weeks post-cessation. If early relapse could be prevented, long-term success rates in theory should be much higher. We designed a study whose aim was to increase the likelihood of successful early abstinence and subsequent long-term abstinence. We randomized 258 adult smokers (Mean age=43 years; SD=9, range 18-70) to either a front-loaded or standard weekly behavioral counseling condition. While the counseling content and total number of counseling sessions were the same for the 2 treatment groups, those assigned to the front-loaded condition received 6 counseling sessions in the first 2 weeks post-cessation while relapse is especially likely. Subjects in both groups also received standard nicotine-patch treatment. Continuous abstinence (no smoking at all after the quit date) was the definition of abstinence/relapse used in statistical analyses; survival analyses (Cox regression) were used to assess significance. After 2 weeks of follow-up, there was a trend for those assigned to the front-loaded condition to do better than those assigned to standard weekly counseling (51% vs. 43% abstinent, p=.16). At 6 months post-cessation, the front-loaded group had a significantly larger proportion abstinent (24% vs. 9%, p=.0001). The provision of early relapse-sensitive counseling may be a treatment option that can significantly increase success rates among addicted smokers.

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POS1-67 ABSTINENCE-SPECIFIC SOCIAL SUPPORT FOR SMOKING CESSATION: A LONGITUDINAL ANALYSIS

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Research shows that abstinence-specific social support during the active phase of quitting predicts short- and long-term smoking cessation treatment outcome. The present study replicates this finding, and extends it by describing changes over time in the provision of abstinence-specific support and examining how support provided during middle and later phases of the quitting process may be associated with treatment outcome. This secondary analysis of combined data from three randomized clinical trials of smoking cessation treatment (N=739) focuses on multiple administrations of the Partner Interaction Questionnaire (PIQ, Cohen & Lichtenstein, 1990), a measure of smoking-related social support. Longitudinal analyses found that negative support held constant over time, and was useful at all follow-up points for differentiating between these outcome groups: (1) those who never quit smoking; (2) those who quit and relapsed; and (3) those who maintained abstinence throughout the study. In contrast, positive support peaked at week 12, decreasing steadily thereafter. There were no differences between outcome groups in positive support provided after week 12. These results suggest that both positive and negative support are both important factors in the early phase of quitting, but it is the continued minimization of negative support that best predicts maintenance of non-smoking. Implications for clinical research and practice are discussed.

Funding for this work was provided by the National Institute on Drug Abuse (NIDA) through San Francisco Treatment Research Center (PS0 DA-09263), Postdoctoral Training in Drug Abuse Treatment and Services Research (T32 DA-00729), and grants R01 DA-2538 and R01 CA-71378.

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POS1-68 SELF-EFFICACY AND SMOKING CESSATION: A META-ANALYSIS

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According to social-learning relapse models, abstinence self-efficacy (ASE), or confidence in one’s ability to abstain from smoking, should predict the outcome of an attempt to quit smoking. Lower ASE ratings should be associated with a higher probability of relapse. In this meta-analytic review, we identified 54 studies that prospectively examined this relationship. The overall association between ASE and cessation outcome and potential moderators of this relationship were examined. Across all studies, those who would be smoking at follow-up had lower baseline ASE scores than those who would be abstinent, d=-0.33, SE=0.04, p<.001. Thus, at baseline, ASE was 0.33 standard deviations lower among individuals who would ultimately relapse. The association was much stronger among studies that failed to account for smoking behavior at the time of the ASE assessment (d=-0.44) than among studies that analyzed participants who were abstinent at the time of assessment (d=-0.27) or statistically controlled for concurrent smoking rate in analysis (d=-0.17). The ASE cessation outcome relationship was also moderated by the timing of the ASE assessment; it was stronger when the assessment was completed after the onset of the quit attempt (d=-0.47) than before (d=0.21). The number of items in the ASE measure and the length of time between the ASE assessment and the outcome measure did not moderate the relationship. Some evidence of publication bias was observed. This quantitative review suggests that the relationship between ASE and smoking cessation is modest and may be inflated in studies that fail to account for concurrent smoking behavior. These findings support the inclusion of ASE in conceptual models of relapse, but raise questions about the utility of using ASE measures in isolation to identify smokers at high-risk for relapse in clinical practice.

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POS1-69 MENTAL MODELS OF QUITTING: A QUALITATIVE STUDY OF DYADS

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Many intervention studies have involved non-smoking partners (e.g., spouse) with the hope that partner support can increase the chances of success for smokers trying to quit. Few of these studies, however, have explored whether the partner share an understanding about the process of quitting, which may affect how the non-smoker tries to support the smoker during the process. This study assesses mental models, or beliefs, about quitting, specifically in dyads of smoking men and their non-smoking female partners. It also compares partners’ views on quitting and support. Because quitting smoking is difficult, most dyads have thought about how to quit and about how to support quitting. Ten dyads of smoking men and their female partners were recruited from callers to the California Smokers’ Helpline. Each individual participant was interviewed separately by telephone. Participants’ mental models were assessed using open-ended interview questions. Some items assessed were: what smokers need to quit successfully in general, and what this smoker needs specifically; how family members and friends can help smokers quit; and what general advice they would give smokers having difficulty quitting. A key finding is that many participants’ mental models of quitting were incomplete in that they could not present a coherent theory of what it takes to quit smoking. Additionally, within dyads, differences in reported views about quitting tended to concern smokers’ readiness to quit and, when non-smokers were former smokers, the non-smokers’ own experience. The incompleteness of their mental models suggests these smokers and their partners’ beliefs about quitting derive from multiple sources. Many of these sources are potentially leading to more shared understanding about quitting and increasing the support non-smokers give to smokers. The qualitative data from this study could be used to develop interventions that employ non-smoking partners supporting those attempting to quit smoking.

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POS1-70 FROM RESEARCH TO PRACTICE: IMPLEMENTING EVIDENCE-BASED TOBACCO TREATMENT GUIDELINES IN STATE CESSATION PROGRAMS

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Evidence-based guidelines for tobacco dependence treatment are well known. Initiatives to implement these guidelines are developing in states funded through tobacco control programs and through partnerships. Quitlines are an important means of implementation accounting for about 10% of $550 million in state tobacco control funding. States also fund initiatives to implement other guideline recommendations (e.g., through health systems), Medicaid programs, and employers. Although implementation through quitlines is documented, little is known about implementation of these other recommendations. In summer, 2006, a 31-question online survey was sent to state tobacco cessation leaders to assess implementation of cessation recommendations in addition to quitlines. A list of 23 cessation initiatives, based on guidelines and recommended by cessation leaders, was included. Of 38 states responding, 68% reported partially or fully implementing at least half of the 23 initiatives. Most commonly implemented were distribution of free NRT, provision of in-person cessation counseling, and integration of cessation services with chronic disease, maternal/child health programs, and within priority populations. States reported an average of 11 partners who participate in implementation. The greatest challenges reported were effectively working with business, health professionals, and youth. Seven variables were identified that could potentially influence higher vs. lower implementation: program maturity, funding levels, leadership priorities, number of partners, program challenges, number of program advocates, and policies (tobacco taxes and ETS). Of these, only more program advocates was significantly associated with higher implementation (p<.01). States with higher implementation were also likely to have more partnerships (65% vs. 35%) and to have successfully advocated for higher tobacco taxes (59% vs. 41%) but these associations were not statistically significant (p=10, p=11 respectively). This preliminary survey highlights the diversity of initiatives underway in states, a growing consensus about implementation initiatives, and the important role of advocates and partners.

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POS1-71
OUTCOMES OF A SMOKING CESSATION COUNSELING PROGRAM FOR HOSPITALIZED SMOKERS

Hospitalized smokers face a period of enforced tobacco abstinence that may motivate cessation. New JCAHO quality measures require US hospitals to provide cessation intervention to inpatient smokers. This has spurred hospitals to develop smoking counseling programs for inpatients. Little data on cessation outcomes are available to guide these efforts.

Method: At Massachusetts General Hospital, a trained counselor provides smoking cessation counseling to inpatients with any diagnosis who smoke and are referred by hospital staff. Patients counseled during 12 months ending April 2006 were surveyed by telephone 2 and 12 weeks after discharge (d/c) to assess smoking status.

Results: Of 1,525 inpatient cigarette smokers counseled, 1,006 consented to be surveyed; 593 (61%) of these were reached for at least one survey. Respondents smoked a median of 20 cigarettes/day before hospitalization; 88% had made a previous quit attempt. Median duration of counseling was 30 min, and 36% received nicotine replacement during hospitalization. Self-reported 7-day tobacco abstinence rates among survey respondents were 48% at 2 weeks and 46% at 12 weeks (21% and 17%, respectively, if those not reached are counted as smokers). Most quitters (93% at 2 weeks and 74% at 12 weeks) also reported continuous abstinence since d/c. Among continuing smokers, median cigarettes/day decreased to 10 at both 2 and 12 weeks (both p<.0001), with median reductions of 50% at 2 weeks and 33% at 12 weeks. Among those resuming smoking, median time from discharge to first cigarette was 3 days, with 28% smoking on the discharge day. Few (36%) of those who resumed smoking immediately made a subsequent quit attempt post-d/c.

Conclusion. A smoking counseling program for hospitalized smokers produced substantial self-reported cessation lasting for 3 months after discharge. Most patients who resumed smoking did so within days of discharge. They initially smoked at markedly reduced rates, but later drifted closer to prehospitalization levels. These data suggest that efforts to improve smoking cessation rates after hospitalization should begin very soon after discharge. No funding.

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POS1-72
STAGES OF CHANGE FOR SMOKING CESSATION OVER TIME IN A STATEWIDE SURVEY OF ADULTS
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Cigarette smoking is the leading preventable cause of morbidity and mortality in the United States. Abstinence and cessation rates do not include smoking-related attitudes and intentions, thus the Transtheoretical Model's Stages of Change may provide a more sensitive assessment of the progression of smoking cessation. Data derived from the 2000 and 2002 Maryland Adult Tobacco Surveys (MATS) were used to classify adults into one of the 5 Stages of Change: Precontemplation (PC), Contemplation (C), Preparation (P), Action (A) and Maintenance (M). The purpose of this study was to examine the distributions of the Stages for current smokers at both the Statewide and Countywide levels. As found in the extant literature on the Stages of Change, stage status differentiated current smokers on smoking-related variables. The 3 groups (PC, C and P) differed significantly on the average number of cigarettes smoked per day, the average number of years of smoking and an individual's "readiness" to quit smoking (all p's<.001). Statewide analysis of the stages for smoking cessation revealed that although the percentage of smokers in the population is decreasing over time, the majority of current smokers (56% in 2000 and 53% in 2002) were not considering quitting in the next 6 months. Almost a quarter of the current smokers (23% and 24%, respectively) were seriously thinking about quitting but only 4% (23% and 24% in 2002) were planning and preparing to quit. Examination of Stage Status by county of Residence revealed that the Stages of Change for smoking cessation were not equally distributed among the counties. Most counties decreased rates of smoking over time. Two-thirds of the counties showed decreases in % of people in PC over time, suggesting change over time in perspective and smoking and possibly successful cessation activities and campaigns. Identifying where current smokers are in the process of smoking cessation has direct and clear implications for targeting cessation efforts and evaluation of outcomes, particularly at the county level.

This study was funded by a subcontract with the Maryland Department of Health and Mental Hygiene (DHMH).

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POS1-73
UTILITY AND COST EFFECTIVENESS OF A SIMPLE TOOL FOR MATCHING SMOKERS TO TOBACCO CESSATION TREATMENT
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Rationale: The array of effective smoking treatments available in many communities may be confusing to providers and smokers, leading to inappropriate referral and use. We describe results from two clinical trials designed to test the utility and cost effectiveness of a simple decision tool to triage smokers into different levels of treatment.

Methods: In each trial a sample of motivated adult smokers was proactively recruited by telephone and assigned randomly to 2 conditions. In trial 1 smokers were either triaged into one of four levels of treatment (self help, brief telephone counseling, brief telephone counseling + NRT; moderately intense counseling + NRT) or all received moderately intensive counseling + NRT. In trial 2 smokers received a recommendation based on the decision tool to use one of the four treatments described in trial 1, or were sent a list of available treatments and encouraged to self select a treatment. Abstinence, treatment utilization, and user satisfaction were assessed at a 7-month telephone follow-up.

Results: 1450+ smokers participated in each trial. Within the triage conditions, approximately 15% were assigned to receive self help, 15% brief counseling, 55% brief counseling + NRT, and 15% intense counseling + NRT. Relative to moderate counseling + NRT, treatment based on triage was equally effective but cost 40% less per person relative to self selection, rigorous trial did not improve quit rates, but improved user satisfaction and cost 40% less per quitter, largely due to reductions in the number of treatments used/quitter. Implications. A simple, 8 item decision tool to triage smokers into treatment has the potential to improve the cost effectiveness of treatment without reducing overall effectiveness or user satisfaction.

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POS1-74
THE LIVED EXPERIENCE OF USING A BLACKBOARD® SUPPORTED TELEHEALTH INTERVENTION IN SMOKING CESSATION
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Although national trends for tobacco use over the past decade (1992 to 2002) have shown a flat adult prevalence rate of 22 to 23%, tobacco use specific to Missouri has risen from 23 to 27% (TIPS, 2006). The use of tobacco among the college population for the state of Missouri has been consistently higher than that of adults at 27 to 33% (TIPS, 2006). This study used an exploratory approach to describe the lived experience of college students with telehealth when used as a method to quit smoking. A phenomenologic design was used. The goal of this study was to describe the experience of college students who participated in a Blackboard® delivered behavioral counseling program for smoking cessation. The sample consisted of nine enrolled college students age 18 to 24. Data were obtained through individual interviews, which provided data saturation. Data analysis used Colazioni’s technique and HyperRESEARCH® software. Themes identified were (1) helpful educational information; (2) quitting using telehealth is a difficult but enabling experience; (3) there were mixed social and clinical support experiences; and (4) convenient access and familiar format. Anecdotal information also resulted in the identification of three additional themes: (1) smoking pattern changes in college years; (2) multiple previous quit attempts; and (3) similar individual motivation for quitting smoking prior to the teleheath experience. This study contributes to the state of tobacco cessation science by providing information on the client’s online cessation experience. The results of this study indicate that it is user friendly, the students are willing to do it and that it is another option in their effort to quit smoking. This knowledge is important to understanding the phenomenon of quitting smoking. This information can be used to improve marketing strategies and healthcare access for this particularly vulnerable population. It can also help clinicians better relate to the client and to be better prepared to effectively interact online with them.

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POS1-75 THE EFFECTIVENESS OF FREE NICOTINE REPLACEMENT THERAPY THROUGH A MASS DISTRIBUTION PROGRAM: EFFECTS OF AGE, GENDER AND PSYCHIATRIC CO-MORBIDITIES

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There are currently 1.6 million smokers in the province of Ontario, Canada, of which 50% are eligible for Nicotine Replacement Therapy (NRT). Provision of free NRT to smokers via the mail may overcome barriers to accessing effective pharmacotherapy. We hypothesized that mass distribution of NRT across Ontario will be an effective method of increasing overall quit attempts and successful quits. However, quit rates may be influenced by such covariables as age, gender and the presence of psychiatric co-morbidities. 14,000 5-week treatments of either nicotine patch (n=10,000) or nicotine gum (n=4,000) were distributed province-wide to individuals calling in to a 1-800 number. Treatments were mailed to participants' homes along with self-help booklets and information on community resources. Questionnaires were complete at the beginning of the study and again at the end of the 5-week treatment period. 6-month follow-up is being completed. 13,158 individuals were eligible to participate in the study with no significant difference between the number of females and males. Of these, 15.2% of females and 8.5% of males were currently depressed; 11.3% of females and 6.2% of males had a current anxiety disorder; and 1.8% of females and 1.1% of males had bipolar disorder. At the end of the 5 weeks of treatment, over 90% of respondents to the 5-week follow-up phone call reported making a quit attempt since receiving the NRT in the mail, and 55% reported quitting smoking during this time. The number of participants reporting quitting while using the patch (39.8%) was significantly greater than the number of self-reported quits while using the gum (33.4%) (p<0.01). These data will be analyzed using gender, age and psychiatric comorbidities as co-variates. 6-month follow-up data will also be presented.

This study was funded by the Ontario Ministry of Health Promotion and Pfizer Consumer Health Care.

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POS1-76 ONE MAN, ONE VOTE, BUT ALL TRIALS OF NICOTINE REPLACEMENT THERAPY FOR SMOKING CESSATION ARE NOT EQUALLY INFLUENTIAL

Jean-François Etter, University of Geneva, Switzerland

Background: In meta-analyses, all trials are treated equally, as the only factor influencing weight is sample size. Some trials are however more influential than others because they are published in journals with higher impact factors or are cited more often.

Objectives: To assess whether trial characteristics are associated with the number of times articles are cited and with the impact factor of journals where they are published.

Data Sources: All 105 randomized controlled trials included in the Cochrane review of nicotine replacement therapy for smoking cessation. Impact factors and number of citations were extracted from ISI Web of Knowledge and Google Scholar. Data synthesis. Trials comprised 20767 treatment and 18736 control participants. Articles were cited from 0 to 673 times (25th, 50th and 75th percentiles: 8, 22 and 45 times). Articles were more often cited if results were statistically significant (median=41 times) than if they were not significant (17 times, p=0.001), and if impact factors were higher (11 more citations per impact factor point, p<0.001). Patch trials (28 times) were more often cited than gum trials (16.5 times, p=0.001). The number of citations was not associated with the country where the research was conducted, the sample size or the amount of behavioral support. In a multivariate model, the only variable that remained significantly associated with the number of citations was the impact factor. Trials with statistically significant results were published in journals with higher impact factors (median=2.78) than non-significant trials (median=1.81, p=0.03) and patch trials were published in journals with higher impact factor than gum trials (2.42 vs 1.49, p=0.02).

Conclusions: Citations of NRT trials are biased towards trials with larger effects and towards patch (vs gum) trials.

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POS1-77 NON-STANDARD USE OF NICOTINE REPLACEMENT THERAPY: PREVALENCE AND ASSOCIATION WITH SUBSEQUENT CESSATION EFFORTS

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Background: Nicotine replacement therapy (NRT) is approved in the US as a temporary aid for smokers who are trying to quit, and can be purchased without prescription. NRT is not approved to help smokers cut down or delay smoking cigarettes instead of quitting but some smokers use NRT in this 'non-standard' way (NSNRT). Researchers are uncertain whether NSNRT use will deter or accelerate progress towards quitting. This study assesses whether past NSNRT use is associated with future smoking reduction, quit attempts, or quit success.

Methods: We analyzed cohort data from the UMass Tobacco Study. In 2001/02 (baseline), a stratified random sample of Massachusetts adults were contacted by random digit dialing and asked about smoking history and NRT use. Baseline smokers were recontacted in 2003/2004 (n=1712, 56% response rate) to assess current smoking status. We describe smokers with any history of NSNRT use at baseline and use logistic regression to analyze the association between their past NSNRT use and quit attempts, smoking reduction, and smoking cessation at follow-up.

Results: At baseline, 19% smokers had a lifetime history of NSNRT use (14% NSNRT use only, 5% standard and NSNRT use). Smokers who had been NSNRT users were more likely to be older, to be male, to have gotten professional quit advice, and to have tried quitting than smokers who had not been NSNRT users (p<0.05). Controlling for age, sex, race, education, income, professional quit advice, baseline smoking intensity, and baseline intention to quit, prior NSNRT use was not associated with quit attempts in the year prior to follow-up. Among those who did try to quit, prior NSNRT use to cut down or delay smoking increased the likelihood of later standard NRT use (adjusted OR 2.0, p<0.01 and 2.4, p<0.05, respectively), but there was no association between prior NSNRT use and later reductions in smoking or successful quitting.

Conclusion: Among smokers followed for 2 years, prior NSNRT use did not deter or encourage future smoking cessation attempts or success, though it did increase standard NRT use during subsequent quit attempts. NSNRT use is unlikely to have a negative effect on population quit rates.

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POS1-78

PHARMACOTHERAPIES AS CESSION AIDS IN LOW DEPENDENT SMOKERS: A CRITICAL REVIEW AND META-ANALYSIS OF EVIDENCE


Background: Clinical guidelines recommend NRT and bupropion as first line smoking cessation therapies for those who smoke 10+ cigarettes per day. However, the utility of these therapies with the remaining smokers is unknown. This study aimed to: (1) assess evidence supporting the recommended use of NRT and bupropion with "low dependent" smokers, (2) estimate the efficacy of NRT and bupropion in achieving long-term smoking abstinence among "low dependent" smokers.

Methods: Studies from the 2004 Cochrane reviews of NRT and bupropion served as the basis of a critical review. Eligible trials were published in English language journals and reported at least 6-month abstinence. Because of insufficient studies with more valid measures, low dependence was defined as anyone with a Fagerstrom score <7 or HSI of <3. Within studies reporting abstinence rates by level of dependence and odds of clinical quitting for the intervention group were extracted for "low dependent" smokers and a pooled weighted odds ratio was calculated.

Results: Of the 113 eligible trials, 13.7% of NRT and none of the bupropion trials included smoker consuming <10 cigarettes per day. 14 NRT trials reported outcomes by level of nicotine dependence. NRT was associated with increased smoking abstinence for low dependent smokers when compared to control at 6-months (Pooled OR 2.39; 95% CI: 1.66, 3.34) and 12-months (OR 1.68, 95% CI: 1.21-2.26). However, the efficacy of NRT differed by delivery mode. 11/14 studies included in our analysis of "low dependent" smokers exclude individuals smoking <10 cigarettes per day.

Conclusions: Few studies examine the utility of first line pharmacological treatments with "low dependent" smokers, despite evidence that they make up more than one third of all smokers in countries like Canada. Available trials suggest NRT may increase smoking abstinence among low dependent smokers. However, questions about the validity of measures such as the Fagerstrom and HSI for assessing dependence, and their correlation with simple consumption cutpoints make it difficult to determine if recommendations in clinical guidelines should be altered.

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POS1-79

USE OF OVER THE COUNTER AVAILABLE NICOTINE REPLACEMENT PRODUCTS ON TOBACCO CESSATION

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Objectives: 1) Evaluate impact of OTC availability of Chewable powder containing nicotine on tobacco cessation. 2) There looks to be a sudden spurt of manufacturers in India to combine with anti-tobacco activists and advertising their chewable nicotine containing pouches as NRT to achieve unprecedented sale.

Setting: Tobacco Cessation clinic at King George Medical University, Lucknow, India and its 10 satellite centers.

Methods: 680 patients who used OTC product in addition to our advice were select-ed for this project. This includes those who took it themselves or we had advised. Their routine ORP was prepared and all demographic details, psychological status, physical and psychological co-morbidity and severity of addiction were evaluated by Fagerstrom grading and modified FTND in SLT. They were followed up for plus 16 weeks.

Results: Chewable Gutka pouches containing defined amount of nicotine are available in India. Showed a significant increase in the fraction of smokers using chewable powder (P < 0.05) immediately following their availability as OTC. There were also a significantly higher proportion of smokers reporting abstinence with NRT and counseling (P < 0.01). The results of this study suggest that removing the prescription status of NRT products resulted in an increase in number of quit attempts, more sustained smoking abstinence or quitting chewable tobacco. But all these successes reached contemplation stage and repeated counseling was additionally required. Quit rate was about 28% and surprisingly it had no significant relationship with severity of addiction. Failure and addiction to SLT instead of smoking was a problem in 33% cases.

Learning Objective: People should understand that in spite of nicotine being available as an OTC product and its use has some element of manufacturer's intention to sell its product like tobacco, still it is useful in tobacco cessation.

No funding.

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POS1-80

ADDITION TO NICOTINE GUMS IN NEVER USERS OF TOBACCO

Jean-Francois Etter, University of Geneva

Background: Addiction to nicotine gums has never been described in never users of tobacco.

Methods: Internet survey in 2004-2006 in a self-selected sample of 434 daily users of nicotine gums. To assess dependence on nicotine gums, we used modified versions of the Nicotine Dependence Syndrome Scale (NDSS), the Fagerstrom Test for Nicotine Dependence (FTND) and the Cigarette Dependence Scale (CDS-12).

Results: Five never smokers used nicotine gums daily. They had been using nicotine gums for longer than the 429 ever smokers (median=6 years vs 0.8 years, p=0.004), and they had higher NDSS-gum Tolerance scores (median=0.73 vs=1.0, p=0.03), a difference of 1.5 standard deviation units. Two never smokers had never used smokeless tobacco, both answered "extremely true" to: "I use nicotine gums because I am addicted to them", both "fully agreed" with: "after a few hours without chewing a nicotine gum, I feel an irresistible urge to chew one" and with: "I am a prisoner of nicotine gums".

Conclusions: This is to our knowledge the first report of addiction to nicotine gums in never users of tobacco. This phenomenon is however very rare and long-term use of nicotine gums is not known to be harmful.

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POS1-81

PRE-CESSATION TREATMENT WITH NICOTINE FOR SMOKING CESSATION: A RANDOMIZED TRIAL

Jean-Francois Etter, Philippe Huguelet, Jacques Cornuz, Thomas Perneger, University of Geneva

Aims: To test whether a pre-cessation treatment of 4 weeks of 4 mg nicotine gums improved smoking abstinence rates, compared with treatment after cessation only.

Participants: 215 daily smokers were recruited through the internet, by ads in newspapers and by a letter send to all physicians in private practice in Geneva, Switzerland, in 2005-2006.

Measurements: Self-reported smoking abstinence during 7 days before the end-of-treatment survey.

Intervention: In the pre-cessation treatment condition, participants received by mail 4 mg nicotine gums during 4 weeks before and 8 weeks after their target quit date, and they were recommended to decrease their cigarette consumption by half before quitting. In the post-cessation nicotine condition, participants received nicotine during 8 weeks after their target quit date and were instructed to quit abruptly. In both groups, participants were instructed to use 10 gums per day. Instructions were limited to a booklet sent by mail.

Results: Eight weeks after the quit date (end of treatment), self-reported 7-day abstinence rates were 59% in the pre-cessation condition and 52% in the post-cessation condition (p=0.4). When the analysis was restricted to participants who made a quit attempt after entry in the study, quit rates were 60% and 45%, respectively (p=0.13).

Conclusions: Pre-cessation NRT may be more effective than the usual post-cessation treatment. Recruitment is ongoing, and final results will include more participants.

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POS1-82
A PILOT STUDY TO COMPARE PATCH VS LOZENGE FOR SMOKING CESSATION

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Few studies have directly compared nicotine replacement therapies (NRTs) or examined mediators and moderators of relative NRT response. This pilot trial randomized 39 smokers to 6-weeks of nicotine patch or lozenge, assessed potential modulators and mediators of NRT response, and examined co-confirmed 7-day point prevalence abstinence at 2-, 4- and 10-weeks post-target quit date (TQD). There was a trend (p = .13) for higher quit rates in the patch vs. lozenge arm at 4-weeks (70% vs. 47%) and 10-weeks (60% vs. 37%) post-TQD. There was a trend (p=.13) for ever-smokers to have higher quit rates with patch vs. lozenge at 2-weeks (70% vs. 33%), 4-weeks (80% vs. 44%) and 10-weeks (70% vs. 33%) post-TQD. Those who smoked to alleviate negative affect had higher quit rates with patch vs. lozenge at 4-weeks (75% vs. 31%, p=.05) and 10-weeks (58% vs. 23%, p=.08) post-TQD. Those who smoked at regular or predictable times had higher quit rates with patch vs. lozenge at 10-weeks post-TQD (70% vs. 36%, p=.09). Across both arms, those who received their preferred NRT were more likely to quit smoking at 2-weeks post-TQD vs. those who did not (77% vs. 50%, p=.10); men were more likely to quit smoking vs. women at 4-weeks (83% vs. 48%, p=.05) and 10-weeks (75% vs. 37%, p=.05) post TQD; those with lower nicotine dependence were more likely to quit smoking vs. those with higher dependence at 2-weeks post-TQD (70% vs. 44%, p=.10); and those who did not smoke to alleviate negative affect were more likely to quit smoking vs. those who did at 2-weeks post-TQD (79% vs. 48%, p=.06). There were no differences across study arms in withdrawal symptoms and craving. These data can guide future larger trials comparing NRTs.

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POS1-83
SMOKING STATUS AND COGNITIVE TASK PERFORMANCE IN PSYCHIATRIC PATIENTS

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Substance abuse has been shown to have a negative impact on brain regions thought to be related to executive functioning and emotion processing. In the present study, we analyzed data contributed by 138 consecutive patients who completed both smoking and cognitive measures as part of a standard depression assessment. The sample was 69.6% female, with an average age of 35.6±11.4 years and 15.6±2.7 years of formal education. Ninety-five percent of the sample had a DSM-IV diagnosis. Of these, the majority met criteria for diagnosis of M.D.D alone (48.2%) or M.D.D co-morbid with another psychiatric disorder (24.2%). Sixty-five percent were currently taking psychotropic medications (2.1±1.3). There were 77 never smokers, 16 ex-smokers, and 45 current smokers. We expected that ever-smokers would perform worse in facial affect perception and executive functioning measures. Data were analyzed using MANCOVA, with smoking status (ever-smoking vs. never-smoking) as the independent variable and performance on the FEPT and PGNG as the dependent variables. The effect of smoking status was significant for percentage of correctly identified faces but not for percentage of correctly identified animals (p=.04) suggesting a deficit in emotion processing but not in visual processing. Results did correctly identify faces but not for percentage of correctly identified animals (p=.04).

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POS1-84
POST-INTERVENTION LAPSE AND RELAPSE IN ADOLESCENT SMOKERS WITH PSYCHIATRIC COMORBIDITY

Laura MacPherson, Ph.D.*, David R. Strong, Ph.D., Kathleen M. Palm, Ph.D., Ana M. Abrantes, Ph.D., and Richard A. Brown, Ph.D., Brown University, Brown Medical School, and Butler Hospital

Despite the increasing emphasis on cessation research among adolescent smokers, there is currently a dearth of information on lapse phenomena in this developmental group. Better understanding of lapse among youth, and especially in adolescent smokers at greater risk for persistent smoking into adulthood, can help in tailoring interventions. The present study investigated among a sample of comorbid adolescents (n=191, 63% female, 95% White; M=14.5 cigarette/smoking day at baseline) the relapse process across a 12-month follow-up period subsequent to hospitalization and participation in a controlled trial of MI vs. brief advice for smoking. Although the original study did not indicate a differential treatment effect, ninety-two participants (48% of total sample) made a self-identified quit attempt subsequent to treatment, 85% (n=78) of whom reported attempting to quit in the first 6 months following MI. Of those who attempted to quit in the first 6 months, 14% maintained abstinence through the remainder of the follow-up period and 88% lapsed (defined as having smoked at least a puff a cigarette) at least once. Of those who lapsed during the follow-up, 62% reported immediately relapsing to 7 consecutive days of smoking. A survival analysis of time to relapse (defined as 7 consecutive days of smoking) was conducted and indicated that, of those who had attempted to quit in the first 6 months, 22% relapsed in the first week of the quit attempt, 34% had relapsed by the second week of quitting, and almost half (49%) relapsed by one month post-quit. Findings will also be presented examining relevant predictors of time to relapse as well as patterns of smoking behavior subsequent to relapse.

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POS1-86 PERSONALITY FACTORS AND PSYCHOPATHOLOGY AS SMOKING PHENOTYPES
Scott A. Langenecker*, Raphaela Finkenauer, Cynthia S. Pomerleau, Sandy M. Snedecor, Ovide F. Pomerleau, University of Michigan Nicotine Research Laboratory

Personality factors and psychopathology have been implicated in various addictions including smoking. These have primarily been studied in isolation, however, and little research has focused on their possible interactions in relation to smoking. We analyzed a sample of 507 individuals (51.5% female) consisting of high dependent smokers (FTND<4; n=147), moderate dependent smokers (FTND<4, n=49), and nicotine exposed never-smokers (n=271). CES-D was used to assess extent of depressive symptoms. Personality was assessed using the Tridimensional Personality Questionnaire (TPQ). Data were analyzed using a Discriminant function analysis, with depression, Novelty Seeking (NS) and Harm Avoidance (HA) predicting smoking status (never-smoker vs. low-dependent vs. high-dependent). When entered with age and sex, depression, NS, and HA formed one canonical covariate in predicting smoking and nicotine dependence (X = 79.7, p < .0001). Accuracy in prediction within the DFA was 62.4% for never-smokers, 48.3% for low dependent smokers, and 32.7% for high dependent smokers. A posthoc analysis indicated that HA, and not NS, interacted with depression in predicting smoking, with HA showing no association with smoking in non-depressed individuals but being positively associated with smoking in depressed individuals. Our results further indicate that depression and personality factors are more highly predictive of low-dependent smoking, in line with suggestions that physiological factors are more relevant to an understanding of high-dependent smoking. We conclude that there are at least three important endophenotypes for smoking: (1) physiological (level of dependence); (2) personality-related (high NS); and (3) psychopathological (higher depression).

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POS1-87 DEPRESSION AND SMOKING AMONG YOUTH IN THAILAND AND MALAYSIA: FINDINGS FROM THE ITC SOUTHEAST ASIA SURVEY
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Although research has demonstrated a link between smoking and depression among adolescents, the majority of this research has focused on smoking and depression among Western populations. There exist few studies examining this relationship in non-Western populations. The current study examined the relation between smoking and depression among adolescents in Thailand and Malaysia. We analyzed data from the baseline wave (Jan-March 2005) of the youth sample of the ITC Southeast Asia Survey, a cohort survey of a nationally representative sample of adolescents 13 to 17 years of age (N=1654 across the 2 countries). Weighted logistic regression analyses were conducted to predict smoking status (where 0=non-smoker and 1=current or experimental smoker). Depression was measured using an average score of 4 items taken from the Children’s Depression Inventory (CDI) (items assessing feeling sad, self-deprecation, self-hate, and loneliness in the past 2 weeks). Controlling for country, age, gender, and number of friends that smoke, there was a significant relation between smoking and depression. Adolescents with higher depression scores were more likely to be smokers (p<0.001). Among males, 36% of those above the median on the CDI were smokers vs. 23% of those who were below the median. Among females, 9% of those above the median were smokers vs. 2% of those who were below the median. This depression x gender interaction was significant (p<0.001). This study is the first to be conducted on the relation between depression and smoking among a nationally representative sample of youth in Thailand and Malaysia. These findings point to the need to identify the role of depression in understanding and predicting smoking among youth in these countries, particularly among females.

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POS1-88 CROSS-SECTIONAL COMPARISON OF NEUROCOGNITIVE FUNCTION IN SMOKERS AND NON-SMOKERS WITH BIPOLAR DISORDER AND MAJOR DEPRESSIVE DISORDER
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Numerous clinical and epidemiological studies have suggested higher rates of cigarette smoking in persons with serious mental illnesses (SMIs) such as schizophrenia, bipolar disorder and major depression compared to the general population. One potential vulnerability factor that may predispose SMIs to smoking are neurocognitive deficits which constitute an endophenotype associated with these illnesses, and in the case of schizophrenia, may be altered by smoking. The present study sought to characterize neurocognitive performance amongst smokers and non-smokers with SMIs matched on key demographic variables such as age, race, gender and education. Cognitive testing was performed in a single session of two hours in length, and subjects were given timed smoking breaks to minimize nicotine withdrawal. Cognitive testing consisted of tasks that assessed multiple neurocognitive domains including executive function, verbal and non-verbal learning, working memory, sustained and selective attention, and response-inhibition, decision-making. To date, we have studied a total of 99 subjects, including schizophrenic (n=46), bipolar (n=12), major depression (n=15) and non-psychiatric control (n=26) smokers and non-smokers in this paradigm. Our results, controlling for group differences in age, education, and depressive symptoms, suggest that while all three SMI groups have multiple neurocognitive deficits compared to controls, smoking modulates neurocognitive deficits robustly in schizophrenia, and, to a lesser degree, bipolar disorder, such that non-smokers have significantly impaired performance compared to smokers. Unipolar depressed subjects and non-psychiatric controls are not significantly altered by smoking. These preliminary results suggest that smoking may selectively improve cognitive deficits in schizophrenia, and perhaps bipolar disorder, and that such deficits may constitute a unique determinant of smoking in this disorder.

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POS1-89 DEPRESSION AMONG ADOLESCENT SMOKERS, SUCCESSFUL QUITTERS, AND THOSE WHO HAVE RELapsed
Abigail L. Johnston, Leslie A. Robinson, Ph.D.*, and Katherine V. Morris, M.S.

The links between depression, smoking onset, and smoking cessation have been well-established among both adults and adolescents. However, less research has focused on depressed mood and relapse in teens. Given that both depression and failed quit attempts are common among adolescents who smoke, it appears important to explore the connections between mood and relapse history. However, we are not aware of any studies that have compared the depression levels of youth who have relapsed with those who have quit or continued smoking. This is the purpose of the current report. Data for this study were derived from The Memphis Health Project, a longitudinal study of smoking onset in a biennial cohort of approximately 7,000 students recruited in the seventh grade. During the 4th year of the study (tenth grade for most students), the youth were asked to rate their negative affect on a four-point Likert scale. In addition, data were collected on smoking history, current tobacco use, and a range of other variables. The study procedures have been outlined in detail elsewhere. For the purposes of this analysis, students have been classified into three groups: (1) smokers who have quit and subsequently relapsed; (2) those who have maintained abstinence after a quit attempt; and (3) those who have smoked continuously. Smoking status, gender, and ethnicity (African American vs. Caucasian) serve as independent variables, with negative affect as the outcome variable. Our results describe the relative depression levels for teens who are successful quitters, current smokers without a history of attempted quits, and relapsed smokers. Our findings suggest directions for future research on the relations between negative affect and cigarette smoking among adolescents.

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**POS1-90**

**TOBACCO USE AMONG THOSE WITH SERIOUS PSYCHOLOGICAL DISTRESS: FINDINGS FROM THE NSDUH 2002**

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Despite the continued decline of tobacco use over the past few decades, those with significant psychological impairment(s) may represent a growing faction of the remaining smoking population. Several small scale clinical studies have demonstrated higher rates of cigarette use among those with mental health disorders. However, there have been few population-based studies that have documented the extent of tobacco use among this disadvantaged population. The present study documented the prevalence of tobacco use among outpatients with mental health disorders (i.e., those with and without serious psychological distress) utilizing the 2002 National Survey of Drug Use and Health. The NSDUH is an annual, national probability-based, household survey of the civilian non-institutionalized population. We examined data from 37,100 adults, 18 years and older, who completed the 2002 NSDUH. The K6 scale, a psychometrically validated screening tool, was used to measure SPD in the past year. The K6 includes six questions that measure on a scale of 0 to 4 how frequently respondent experience symptoms of distress (e.g., nervousness, depressed). Respondents with scores of 13 or higher were classified as having SPD. Our analyses indicated that individuals with SPD (8.3% of the total sample) had notably higher rates of cigarette smoking (44.9%) compared to those without SPD (26.0%). Likewise, past month use of other tobacco products (i.e., cigars, smokeless tobacco) was significantly higher for those with SPD. Common indicators of nicotine dependence (i.e., NDSS, FTND) indicated that those with SPD (49.7%, 57.6%, respectively) were more nicotine dependent compared to those without SPD (33.3%, 42.1%, respectively). Lastly, quit ratios differed notably by SPD status; the quit rate for adults with SPD was 29% versus 49% for those without SPD. Serious psychological distress was associated with elevated rates of tobacco use, including cigarettes, cigar and smokeless tobacco products, and dependence, as well as greater difficulty achieving abstinence. Continued research is warranted to further understanding how effective tobacco control policies have impacted this specific population.

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**POS1-91**

**SOCIAL SUPPORT FOR QUITTING AND MOTIVATION TO QUIT SMOKING IN OUTPATIENTS WITH SCHIZOPHRENIA**

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Smokers with schizophrenia are 5 times less likely to quit than smokers without serious mental illness. Social support for quitting helps smokers in the general population quit and remain abstinent (Merrellstein et al., 1983), but the extent to which smokers with schizophrenia receive such support is unknown. In this study we asked outpatients with schizophrenia or schizoaffective disorder (n=40) who had a person in their life (romantic partner, close friend or family member) who would support them in their efforts to quit. Participants who indicated "yes" then completed the 20-item Partner Interaction Questionnaire (PIQ; Cohen and Lichtenstein, 1990), which assesses amounts of positive (supportive) and negative (critical) support provided and ratio of positive to negative support. We also used the Contemplation Ladder (Biener and Abrams 1991) to measure motivation to quit smoking, and examined whether Contemplation Ladder scores were positively correlated with the PIQ positive score or PIQ positive/negative ratio. Participants (n = 44) were 43 +/- 9 (M +/- SD) years of age, 59% male, and smoked 24 +/- 12 CPD. There were no M/F differences on age, CPD, Contemplation Ladder score or PIQ scale scores. 79% of participants indicated that there was a person in their life that would support them in their efforts to quit. The with- and without-support groups had similar mean age and CPD, but differed on proportion of women (48% vs. 11%, respectively; p < .05). Participants with supportive partners had higher Contemplation Ladder scores than those without (with-support group: 6.7 +/- 2.5; without-support group: 4.9 +/- 2.1; p < .05). The mean PIQ-Positive scale score was 29.7 +/- 7.5, the mean PIQ-Negative scale score was 24.4 +/- 8.0 and the PIQ Pos/Neg ratio was 1.40 +/- 0.8. Contemplation Ladder scores did not correlate with PIQ scale scores or PIQ Pos/Neg ratio. Outpatients with schizophrenia who have an important person in their life who supports their quit attempts are more motivated to quit than those without a supportive partner. However, we did not see an association between motivation to quit and amount of social support provided.

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**POS1-92**

**PREVALENCE OF TOBACCO USE IN A TREATMENT OUTCOME STUDY OF PARTICIPANTS DIAGNOSED WITH ANXIETY DISORDERS**

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A high prevalence of smoking has been observed in those with either alcohol use disorders (AUD) or other smoking-related disorders. However, little is known about smoking among individuals with co-existing anxiety disorders and AUD, which may be a particularly vulnerable group to the cumulative health risks associated with each disorder. In an ongoing clinical trial examining pharmacological and psychological treatments for adult patients with co-occurring anxiety disorders and AUD, the point prevalence of tobacco use was assessed. The smoking status of 49 participants was assessed during a baseline assessment, using the Anxiety Disorder Interview Schedule (ADIS), and the Form-90 Alcohol Intake Revised (Form-90 AIR). The ADIS assessed current anxiety and alcohol use disorders, as well as smoking status, and the Form-90 AIR assessed frequency and quantity of alcohol and substance use, including tobacco. The prevalence of smoking was 53.1%. Smokers smoked an average of 12.2 cpd (SD = 8.9). Although sample sizes were small by anxiety diagnosis, preliminary data indicated that participants with panic disorder had the highest smoking prevalence (100%; 3/3), which is consistent with the literature. Participants with generalized anxiety disorder and social anxiety disorder had smoking prevalence rates of 51.5% (17/33) and 46.2% (6/13), respectively. Across diagnoses, daily smokers drank significantly more alcoholic drinks per week (dpw) than nonsmokers [74.7 dpw and 37.8 dpw for smokers and nonsmokers, respectively; t(28)=3.08, p<01]. Overall, these preliminary data suggest that smoking prevalence may be much higher among co-occurring anxiety disorders and AUD than estimates previously reported among anxiety disorders in the absence of AUD or substance disorders (14.8%; Morrisette, 2004). Although these smoking prevalence estimates are lower than those typically found in studies of AUD (up to 75% of those in early recovery; Gulliver et al., 1995, 2001), smokers with anxiety disorders and AUD were drinking significantly more than their nonsmoking counterparts, which may have important implications for treatment outcome.

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**POS1-93**

**THE RELATIONSHIP BETWEEN POST-TRAUMA SYMPTOMATOLOGY AND SMOKING-RELATED VARIABLES**

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Smoking rates among trauma-exposed individuals are elevated (45-60%) compared to the general population (Beckham 1999). Despite the strong association between trauma and cigarette smoking, there has been little research directed at understanding how post-trauma symptom clusters may relate to smoking. Furthermore, most studies in this area have focused on posttraumatic stress disorder (PTSD) as a discrete disorder, as opposed to relating smoking to a broader range of post-trauma symptomatology. The present study examined the relationship between PTSD symptoms and smoking-related variables (e.g., amount, dependence, and cravings). Based on previous literature, we hypothesized that smoking indices would be positively correlated with hyperarousal-symptoms of PTSD, relative to other symptom clusters (i.e., re-experiencing and avoidance). In addition, we expected to find greater amount of PTSD-related impairment among heavier smokers. Participants were 74 daily smokers (cigarettes per day M=21.7, SD=10.6), who were exposed to one of the following traumatic events in their lifetime: motor vehicle accident, fire, robbery, physical assault, sexual assault (only females), and being held at gunpoint. Participants completed several smoking-related questionnaires, as well as the PTSD Checklist (PCL; Weiss & Marmar 1997). We then assessed presence and severity of all DSM-IV PTSD symptoms. Findings indicated that scores on the Questionnaire of Smoking Urges-Brief (QUS-Brief, Cox, Tiffany, & Christen, 2001) were significantly correlated with functional impairment as measured by the PIS (r=-0.4, p<01). Consistent with our hypothesis, QUS-Brief scores were significantly correlated with severity of hyperarousal cluster symptoms (p<.02), but not with other symptom clusters. There were no significant relationships between post-trauma symptom clusters and other smoking-related variables. Overall, these findings suggest that a more fine-grained analysis of the relationship between post-trauma symptoms and smoking can yield valuable information which can be used to improve smoking cessation treatment among smokers who have trauma-related symptomatology.

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POS1-94 THE RELATIONSHIP BETWEEN NICOTINE, ATTENTION AND HEALTH STATUS IN SCHIZOPHRENIA

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Cigarette smoking in schizophrenia represents a serious and problematic health-related behavior. The rates of smoking, upwards of 90%, in this psychiatric population may be related to aberrant nicotinic acetylcholine receptors and result in higher than average levels of nicotine and metabolites. In the context of primary cognitive functioning deficits in schizophrenia, including attention, investigation of the relationship between nicotine levels and cognitive performance is warranted. In this study, we performed an experimental manipulation of nicotine levels to examine the relationship with attention. Thirty-five age-matched male subjects (21 schizophrenia, 14 control) were recruited from the VA Boston Health Care System - Brockton Division and within the community. All subjects completed a behavioral test of attention (Attention Network Test) at three conditions including baseline (without cigarette smoking 1 hr), early withdrawal (without cigarette smoking 8 hrs) and patch (21mg Nicoderm CQ transdermal nicotine patch 3 hrs). Saliva samples were collected at each condition and analyzed for nicotine using gas chromatography. Results indicated that subjects with schizophrenia (M=253.00 ng/ml) demonstrated increased levels of nicotine across conditions F(1, 32)=7.00, p<.05, and at the early withdrawal condition (M=141.06 ng/ml), t33= 2.74, p<.05, but not at baseline or patch. Greater levels of nicotine were associated with greater body mass index (BMI; r=.46), reduced benefit from alerting cues (r =-.48) and greater difficulty in resolving conflict (r=.56). In addition, reduced BMI scores were associated with improved ability to resolve conflict at baseline (r=.49) and patch (r=.47). Younger subjects also showed improved use of alerting cues at baseline (r=.50) and nicotine patch (r=.46). Possible explanations of increased nicotine levels include intensity differences in smoking behavior, altered metabolism of nicotine and interrupted smoking withdrawal behavior. The relationship between nicotine and health status, with respect to cognitive performance, in schizophrenia represents an area for continued research.

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POS1-95 ONSET OF SCHIZOPHRENIA AND SMOKING BEHAVIOR IN A SAMPLE OF AFFECTED SIB PAIRS

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Introduction: Smoking rate is higher among patients with schizophrenia than among the general population. In addition, cigarette smoking has been reported to have beneficial effects on mood, extra pyramidal and negative symptoms, as well as on cognitive functioning. Also, there is compelling evidence from family studies of a substantial genetic contribution to schizophrenia and smoking behavior. It is well known that suffering from schizophrenia increases the risk of smoking. The aim of the present study was to examine the concordance of the smoking phenotype among families with two siblings affected with schizophrenia.

Methods: This is a retrospective study, from a NIMH funded project about the genetics of schizophrenia in Latino populations (Escamilla et al. 2006). We enrolled 50 affected sib pairs (SPs) with DSM-IV diagnosis of schizophrenia. Subjects were originally recruited for a family linkage study of schizophrenia and schizoaffective disorder. A best estimate consensus process was used to assign final diagnoses. Smoking history was measured according to the corresponding item of the Diagnostic Interview for Genetic Studies (DIGS).

Results: The chi-square square was used to assess concordance of smoking presence within SPs based on gender and onset of schizophrenia. There was a higher frequency of smoking behavior and early onset of schizophrenia in women SPs. There was a significant difference in smoking between men and women SPs "p=.043. However, this difference was not significant when onset or gender were considered. Concordance was significant for both genders. However, there was a significant difference between early and late onset SPs in men (M=141.06 ng/ml), t33= 2.74, p<.05, but not at baseline or patch. Greater levels of nicotine were associated with greater body mass index (BMI; r=.46), reduced benefit from alerting cues (r =-.48) and greater difficulty in resolving conflict (r=.56). In addition, reduced BMI scores were associated with improved ability to resolve conflict at baseline (r=.49) and patch (r=.47). Younger subjects also showed improved use of alerting cues at baseline (r=.50) and nicotine patch (r=.46). Possible explanations of increased nicotine levels include intensity differences in smoking behavior, altered metabolism of nicotine and interrupted smoking withdrawal behavior. The relationship between nicotine and health status, with respect to cognitive performance, in schizophrenia represents an area for continued research.

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POS1-96 SURVEY OF CLINICIAN ATTITUDES TOWARD SMOKING CESSATION FOR PSYCHIATRIC AND SUBSTANCE ABUSING CLIENTS

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Psychiatric and substance-abusing patients smoke at higher rates than the general population and have difficulty with smoking cessation. The clinicians of these patients can play an important role in providing information and support regarding smoking cessation. Little is known about the attitudes of clinicians, across various professional roles, toward smoking cessation and psychiatric patients. The current study examined the attitudes of clinicians regarding smoking cessation for psychiatric and substance abusing patients. Thirty-four clinicians completed a 10-item 5-point Likert scale (1=strongly disagree to 5=strongly agree). Participants included n=16 never smokers, n=12 former smokers, and n=7 current smokers. The three smoking groups did not differ on gender, race, professional field (e.g., R.N., M.D.), nor clinical team (e.g., psychos, dual diagnosis). There were no significant differences as a function of smoking status on responses to any of the attitude questions although there was a trend for Current Smokers to be less likely to agree and Former Smokers to be most likely to agree that they encourage their clients to stop smoking (Current Smokers M=3.43, SD=1.13, Never Smokers M=4.20, SD=0.86, Former Smokers M=4.42, SD=1.16; F=2.21; df=2, 34; p=.04). Overall, clinicians strongly agreed (M=4.68) that an individual’s motivation is the most important determinant of success in quitting. Clinicians were less certain (M=3.50) whether smoking cessation would initiate a relapse to substance abuse. Male clinicians were more likely than female clinicians to agree that a patient having cut down on his/her smoking (as opposed to quitting) would be an important goal (Male M=4.67, SD=0.50; Female M=3.72, SD=0.79; p=0.01). No other responses were significantly different by gender. The current study was limited by small sample sizes and should be repeated with a larger sample. Overall, clinicians in this study agreed that smoking cessation is an important goal for their patients regardless of their current smoking status. Clinicians can be instrumental in providing information, encouragement, and opportunities for their patients to attempt smoking cessation.

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POS1-97 THE CONTRIBUTION OF SMOKING TO SOCIO-ECONOMIC DIFFERENTIALS IN MORTALITY: RESULTS FROM THE MELBOURNE COLLABORATIVE COHORT STUDY, AUSTRALIA

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Study objective: To assess the contribution of smoking to the inverse association of mortality with years of formal education in men in Australia.

Design: The data were from a prospective cohort study that included 17,049 men in Melbourne (Australia) recruited from 1990 to 1994, most of whom were aged between 40 and 69 at baseline. The outcome was all-cause mortality. The contribution of smoking to socio-economic status differentials was estimated by adding smoking to a Cox’s proportional hazards model that included education and other potential confounding variables. Main results: In men, the association between education and mortality was attenuated after adjustment for smoking and the aetologic fraction for low level of education was reduced from 16.5% to 10.6%

Conclusions: In men, smoking makes a substantial contribution to socio-economic differentials in mortality. Effective policies and interventions that target smoking among socially disadvantaged groups may substantially reduce socio-economic differentials in health.

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POS1-98

WHEN THE SMOKE CLEARS: FIRE RISK BEHAVIOURS OF CANADIAN SMOKERS
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Fires started by smokers' materials are the leading known cause of fire-related death in Canada. The Canadian Cigarette Ignition Propensity Regulations require all ciga-
rettes manufactured in or imported for sale into Canada on or after October 1, 2005, to meet an ignition propensity standard. The most serious fire risk behaviours include smoking in bed, falling asleep with a lit cigarette and leaving a lit cigarette unattended in an ashtray. Using questions on various omnibus surveys, data were collected from over 2,500 smokers between November 2003 and January 2005. Since February 2005, data were collected from smokers (n=4384) in the ongoing Canadian Tobacco Use Monitoring Survey (CTUMS). Accounting for survey differences, reported fire risk behaviours remained consistent over time. In 2005, approximately one in three smokers reported having ever smoked in bed with almost half of those having done so in the past week (12.0% of smokers). Males were slightly more likely than females to report this behaviour in the past week (p=0.08). The report of smoking in bed in the past week decreased with age (p=0.001). Among those who have ever smoked in bed, 17.9% did so everyday and an additional 14.2% a few times a week. One in 10 smok-
ers reported having fallen asleep with a lit cigarette. Leaving an unattended cigarette burning in an ashtray was not uncommon, 21.7% of smokers reported having done so in the past week and there was no difference between males and females (p=0.79). Of those who had left a cigarette burning in an ashtray while attending to something else, 16.5% stated that they did so every day. Results from 2003-04, indicate that about 12% of smokers reported accidentally burning something in the previous 2 weeks. Despite the potential for underreporting of less socially acceptable behaviour, fire risk behaviours seem to be somewhat common practice among Canadian smok-
ers. Ongoing monitoring of these behaviours is being carried out to identify any impact of the regulations with respect to an increase in the prevalence of these behaviours and a decrease in the frequency of fires started by smoking materials.

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POS1-99

INTERACTIVE VOICE RESPONSE TELEPHONE TO PROMOTE SMOKING CESSATION IN PATIENTS WITH HEART DISEASE: A PRELIMINARY STUDY
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Objective: To gather preliminary evidence of the effectiveness of an interactive voice response (IVR) follow-up system to support the effectiveness of smoking cessation in patients fol-
lowing hospitalization for coronary heart disease (CHD) during which they received specific smoking cessation assistance.

Methods: Ninety-nine smokers hospitalized with CHD completed a baseline ques-
tionnaire, were provided with bedside counseling and offered nicotine replacement therapy. They were randomly assigned to a usual care (UC) or an IVR group. Participants in the IVR group received automated telephone follow-up calls 3, 14 and 30 days after discharge inquiring about their smoking status and confi-

"results: Fifty-two weeks following hospitalization (primary endpoint), the point prevalence abstinence rate in the UC group was 34.7% (17/49) compared to 46.0% (23/50) in the IVR group. A logistic regression model was fit to the point prevalence smoking status (with even one puff counting as smoking) and included treatment group, age, reason for and duration of hospitalization, timing of first daily cigarette and number of quit attempts in the past year as independent variables. The adjusted odds ratio of quitting smoking in the intervention group compared to the control group was 2.27 (95% CI=0.92-5.62, p=0.07). In terms of the number needed to treat, for every 100 smokers followed, 11 will quit smoking by 52 weeks because of the IVR system and associated follow-up care. A similar analysis of the 12 week data result-
ed in an adjusted odds ratio of 1.67 (95% CI=0.68-4.11; p=0.267).

Conclusions: IVR is a promising intervention to assist in the follow-up, triage and counseling of smokers following a hospitalization for CHD. Preliminary analysis sug-
gests the application of this technology may increase the likelihood of successful ces-
sation in the longer term. It needs to be validated in a larger, definitive trial.

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POS1-100

REVERSAL OF RISK AFTER QUITTING SMOKING
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The International Agency for Research on Cancer convened a Working Party (WP) in March 2006 to assess the evidence on the reversal of risk upon quitting smoking. 17 experts from 8 countries gathered to assess changes in risk relative to smoking-
related cancers, cardiovascular disease and chronic obstructive lung disease following smoking cessation. The WP examined the scientific evidence to answer 3 questions: 1. is the risk for disease lower in former smokers than in continuing smokers; 2. what is the time course of the reduction in risk with continued abstinence, and 3. does the risk return to that of never smokers after long periods of abstinence? The assessment by the WP concluded that published studies showed a lower risk of lung cancer in former smokers within 5-9 years of cessation and progressively diverges with longer periods of abstinence when compared to current smokers. A substantially lower risk for lung cancer results with cessation in middle age compared to stopping at an older age. However, the absolute annual risk for developing lung cancer in former smokers does not decrease after cessation; there is persistent increased risk in relation to never smokers. The risk for cancers of the larynx, oral cavity, pharynx, pancreas, stomach, bladder, colon and rectum was similarly examined. The same three questions are addressed to cardiovascular dis-
ease (coronary artery, cerebral vascular, peripheral vascular and aortic aneurysms) and chronic obstructive pulmonary disease. Global projections and trends in mortal-
ity were discussed, in addition to mechanisms of action. There are significant health benefits with cessation that accrue with increasing duration of abstinence for all tobacco related cancers, cardiovascular disease and chronic obstructive lung dis-
ease.

Ministère de la santé, de la famille et des personnes handicapées, France.

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POS1-101

COMPOUNDING RISK FACTORS: THE NEGATIVE SYNERGY BETWEEN SYSTEMIC DISEASE, ORAL DISEASE AND SMOKING
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The detrimental health effects of smoked tobacco is well established and has lead to specific guidelines, educational materials and cessation intervention strategies to help people quit tobacco use or avoid exposure to the harmful environmental tobacco-
co smoke. Healthcare providers are encouraged to tie a patient's tobacco use to their health concern and utilize the teachable moment when advising the patient to quit. Unfortunately, healthcare has moved into a very fragmented delivery system where providers and patients may not full consideration to the true level of compounding risk factors, which together, pose a much greater health concern than just one isolated disease the patient presents with. It is well established that smoking is a causative factor for coronary heart disease. Research also indicates that smoking is a causative factor in the development of periodontitis or gum disease. Like in other sys-
tems of the body, smoking compromises the immune system needed to successful-
ly combat the hundreds of different bacteria found in the mouth. When the immune system is no longer able to fight the bacterial infection, negative anaerobes establish a chronic infection below the visible tissue or gum resulting is a steady release of these harmful negative anaerobes into the blood stream. Numerous studies indicate periodontitis as being a contributing factor not only in the development of coronary heart disease but also in the poor control of diabetes, upper respiratory infections and contributing to pre-term birth. A current scientific review of the multilevel risk factors for smoking related morbidity and mortality from the oral and systemic disease process will be presented. Special emphasis will be made to stress the need for cli-
nicians to review all compounding risk factors with their tobacco using patients dur-
ing the teachable moment then making appropriate referrals for out-of-specialty care.

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POS1-102 SMOKING STATUS, BODY IMAGE, AND QUALITY OF LIFE OUTCOMES IN ORAL CAVITY CANCER PATIENTS BEFORE SURGICAL TREATMENT

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For oral cavity cancer patients, two significant behavioral and psychosocial issues that can substantially affect quality of life (QOL) include tobacco use and body image changes. In the general population, much research supports the negative effects of smoking on QOL as well as an association between body image and smoking behaviors. In oral cavity cancer patients, these relationships must be explored further and have important implications for the development of psychosocial and smoking cessation treatments. This study was conducted to examine: (1) the relationship between smoking status and body image; and (2) the influence of smoking status on QOL outcomes in oral cavity cancer patients prior to surgical treatment. Newly diagnosed oral cavity cancer patients (N = 40) underwent carbon monoxide testing to verify smoking status and completed a battery of self-report questionnaires. The sample was comprised of 24 men and 16 women. Forty percent of participants were current smokers (N=16). Current smokers had elevated body image concerns compared to non-smokers, a marginally significant effect (p=0.08) which remained essentially unchanged when controlling for sex. Smoking status was significantly (p values <0.05) associated with pretreatment QOL domains related to emotional functioning across numerous measures including a generic QOL instrument, a disease-specific QOL instrument, and a measure of psychological distress. Smoking was not found to influence pretreatment indicators of physical functioning, social functioning, pain, or general health. These findings suggest smoking status and QOL are related. Differences in smoking behavior and suggest the use of cessation interventions targeting emotional functioning with oral cavity cancer patients. This study supports the need for further research on the association between body image and smoking status in oral cavity patients with a larger sample size for improved power to detect effects. Moreover, prospective evaluation of smoking status, body image, and QOL outcomes are needed to determine how changes in smoking behaviors and body image following surgical intervention affect these associations.

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POS1-103 CIGARETTE SMOKING, BLADDER CANCER, AND CHANGES IN RISK OVER 40 YEARS


Objective: To test the hypothesis that the risk of bladder cancer from cigarette smoking has increased over time. A result of the changing cigarette is an increase in the levels of aromatic amines over the past 40 years. One limitation is a very limited sample size for improved power to detect effects. Moreover, prospective evaluation of smoking status, body image, and QOL outcomes are needed to determine how changes in smoking behaviors and body image following surgical intervention affect these associations.

Method: Patients who attended Roswell Park Cancer Institute between 1957 and 1965 and completed a similarly detailed questionnaire were eligible for case-control analysis #1, while patients who attended Roswell Park Cancer Institute between 1982 and 1997 and completed a similarly detailed questionnaire were eligible for case-control analysis #2. Nine-hundred fifty cases (520, 430; analysis #1, #2, respectively) received all UC components plus a series of B proactive counseling sessions delivered via cell phones. Symptom status and HRQOL were assessed at baseline and again at a 3-month follow-up visit. Results of multiple linear regression analyses indicated that duration of smoking abstinence (in days) during the period was associated with a significant decrease in HIV-related symptom burden (coefficient=-0.16, p<0.05). This relationship remained significant after controlling for baseline symptom burden levels, treatment group, age, and education level. However, 3-month follow-up levels of HRQOL, as measured with the MOS-HIV, were not significantly associated with abstinence length. Findings indicated that smoking abstinence might play an important role in the reduction of HIV-related symptom burden.

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POS1-104 EFFECTS OF SMOKING CESSION ON SYMPTOM STATUS AMONG PERSONS LIVING WITH HIV/AIDS

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While medical advances in the last ten years have resulted in significantly lengthened life expectancies, persons living with HIV/AIDS are still likely to experience numerous disease- and treatment-related symptoms. These symptoms can adversely affect health-related quality of life (HRQOL). Despite the well-documented association between cigarette smoking and numerous AIDS-related and other diseases, smoking remains a highly prevalent (45-70%) health-risk behavior within the HIV-positive population. However, the potential benefits of cessation on symptom status and HRQOL have not yet been explored. Therefore, the purpose of the current study was to provide a first step in the exploration of this relationship. Specifically, this study examined the relationship between smoking cessation and HIV-symptom status and HRQOL. Data for this investigation were collected in the context of a randomized clinical trial. Nineteen participants from an inner-city AIDS clinic were randomized to receive either a cell phone intervention (CPI) or usual care (UC) smoking cessation treatment. Participants in the UC group (n=47) received brief physician advice to quit smoking, a 10-week supply of nicotine patches, and self-help materials. Participants in the CPI group (n=48) received all UC components plus a series of B proactive counseling sessions delivered via cell phones. Symptom status and HRQOL were assessed at baseline and again at a 3-month follow-up visit. Results of multiple linear regression analyses indicated that duration of smoking abstinence (in days) during the period was associated with a significant decrease in HIV-related symptom burden (coefficient=-0.16, p<0.05). This relationship remained significant after controlling for baseline symptom burden levels, treatment group, age, and education level. However, 3-month follow-up levels of HRQOL, as measured with the MOS-HIV, were not significantly associated with abstinence length. Findings indicated that smoking abstinence might play an important role in the reduction of HIV-related symptom burden.

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POS1-105 HIV+ MEN AND WOMEN AND SMOKING CLASSIFICATION: PREVALENCE AND CORRELATES IN A CLINIC SAMPLE

Monica S. Webb, Ph.D.*, Peter A. Vanable, Ph.D., and Michael P. Carey, Ph.D.

The prevalence of cigarette smoking among HIV-positive individuals is higher than the national average. However, factors related to smoking within this population are not well understood. The purpose of this study was to examine the associations between smoking behavior, demographic, medical, and psychosocial correlates in a multi-ethnic, clinic-based sample of HIV-positive patients. Two hundred nine HIV-positive men and women completed self-report measures of HIV-related symptoms, viral load, alcohol use, depression, social support, and tobacco use. Participants were classified into one of four groups: (1) nonsmoker; (2) light smoker [1-9 cigarettes per day (cpd)]; (3) moderate smoker (10-19 cpd); or (4) heavy smoker (>20 cpd). Multinomial logistic regression analyses modeled the independent associations of the cross-sectional set of predictors with smoking status. Results indicated that 74% of the sample smoked at least one cigarette per day; 23% of the sample were light smokers, 22% were moderate smokers, and 29% were heavy smokers. The multivariate model explained 50% of the variance in cigarette smoking status. The levels of smoking were consistently associated with HIV-symptoms, alcohol use, and social support. Light smoking was related to African-American ethnicity, older age, and less income; moderate smoking was associated with African-American ethnicity, and fewer depressive symptoms; and heavy smoking was related to less education. Depression was not a major predictor of smoking status. In conclusion, smoking is independently associated with a range of factors that are also indices of reduced health-related quality of life in HIV-positive patients. Psychosocial interventions targeting this population should consider the relationships between these factors and smoking behavior.

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POS1-106  THE RELATIONSHIP BETWEEN CIGARETTE SMOKING AND LUNG FUNCTION IN ADOLESCENTS

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This study examined the smoking prevalence and the association of cigarette smoking and lung function among the employees of the four large companies in Moscow (two insurance companies, a bank and an airport). 1706 employees performed a lung function test and exhaled CO test. All of them were asked about smoking history, complaints on cough, phlegm. 51% of male participants were current smokers, ex-smokers – 39% and never-smokers – 12%. 34% of female participants were current smokers, ex-smokers – 7% and never-smokers – 55%. Educated employees had significantly a lower smoking prevalence than workers. Among educated employees 48% of male participants were current smokers, ex-smokers – 15% and never-smokers – 37%; 34% of female participants were current smokers, ex-smokers – 9% and never-smokers – 57%. Among workers 65% of male participants were current smokers, ex-smokers – 8% and never-smokers – 27%; 50% of female participants were current smokers, ex-smokers – 5% and never-smokers – 45%. The analysis of the complaint prevalence and the results of lung function test indicated that clinical manifestations displayed later than lung function disturbances affected by smoking. Among the participants a half of them had the disturbances of lung function and only a quarter of them had the complaints on cough and phlegm. Regression analyses revealed that there was a strong relationship between smoking intensity and decline in lung function.

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POS1-107  INCIDENCE OF SMOKING AMONG FAMILIES HAVING CHILDREN WITH ASTHMA IN THE COUNTY OF ACHAIA, GREECE

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Aim: The evaluation of smoking prevalence among families having children with asthma in the County of Achaia.

Methods: Epidemiological survey conducted in 239 parents having children with asthma, 67 women (28%) and 172 men (72%), aged between 20-41 years, in April 2008, using an anonymous and confidential self-applied questionnaire. We also ran a spirometry check in the children. Statistics: chi square test.

Results: Currently smokers were 98 (41.4%), 32 female (47.8%) and 67 male (39%); occasional smokers 22 (9.2%). Ex-smokers were 26 (10.9%). The average daily number of cigarettes smoked was 20.8, from which 8.1 at home. Spirometry proved that the children with asthma in smoking environment (SC) were in worse lung conditions than the children with asthma in families without smoking environment (NSC). Also the common presenting symptoms of asthma (cough, wheeze, shortness of breath, chest tightness, runny, blocked or itchy nose, limitation of usual activities) were more common in SC (p<0.025). Asthma attacks were also tripled in SC.

Conclusion: It is known that parents are role models for their children. From our study it is evident that children are harmed especially when they suffer from asthma. The consequences are important: more hospitalizations, missing more classes, and quality of life deterioration. Smoking cessation programs should be introduced among smoking parents as well as continuous education programs to motivate them about their role in the family and in the society.

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POS1-108  AMBULATORY RESTING BLOOD PRESSURE DIFFERENTIATES STRESS-INDUCED REACTIVITY AMONG SMOKERS: PRELIMINARY FINDINGS

Silvina Salvi, B.A.*, Alicia Klanecky, B.A., Susan Drevo, Rachel Bruhn, and Dennis E. McChargue, Ph.D., University of Nebraska-Lincoln

Cigarette smoking is associated with an elevated risk of coronary heart disease and a greater than 70% rate of death from coronary heart disease. These risks are compounded with high blood pressure (HBP). HBP coupled with smoking exerts synergetic effects on disease risk, presumably via a compromised cardiovascular system. Physiological explanations have been postulated. Little is known about psychological stress parameters that may predict HBP in smokers to coronary heart disease risk. The overall study aim (n=26) tested whether HBP smokers (systolic=140-159 and diastolic=90-99) were more reactive to stress than smokers with normal blood pressure (NBP: average blood pressure=120/80 or below). Group (HBP vs. NBP) by condition (stress vs. neutral induction) repeated measures analyses were employed to test for change score differences in smoking urge, blood pressure, and heart rate responses. After controlling for dependence and baseline mood factors, the primary results showed a group X condition interaction for systolic blood pressure (p=.046). HBP smokers’ systolic blood pressure showed significantly greater increases [M= 6.9 (2.1)] during the stressor compared with the sexor with the neutral induction [M=4.2(2.7)]. NBP smokers’ systolic responses showed lower reactivity during the stressor [M=1.1(1.6)] compared with the neutral condition [M=5.1(2.2)]. Given that systolic stress responses are highly associated with future coronary heart disease; our data lend some preliminary support for a stress-induced pathway to disease among HBP smokers.

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POS1-109  THE RECIPROCAL RELATIONSHIP BETWEEN PAIN AND SMOKING: A REVIEW AND DISCUSSION OF FINDINGS, IMPLICATIONS, AND FUTURE DIRECTIONS

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Background: Chronic pain affects some 80 million Americans and, following cancer and heart disease, is the third leading cause of physical impairment in the United States. Cigarette smoking harms nearly every organ of the body and remains the leading preventable cause of death in the United States. The prevalence of smoking among chronic pain patients is approximately double that of the general population. Despite evidence that smoking tobacco may cause, prolong, and exacerbate painful conditions, yet consistent with evidence of smoking-related analgesia, there is reason to believe that some smokers use tobacco as a means of coping with their pain. In fact, most patients report a need to smoke when in pain, and positive correlations have been found between the number of cigarettes smoked per day and intensity of pain reports. Furthermore, our lab recently provided the first experimental evidence that situational pain is a potent motivator of smoking urge and smoking behavior, independent of putative mood effects.

Purpose: Although pain and smoking have been linked in both the clinical and empirical literature for decades, it appears that researchers and clinicians from both fields are largely unaware of the potentially bi-directional relationship between smoking and pain, such that smokers who use tobacco to assuage or cope with pain may unwittingly aggravate their painful condition, while engendering a vicious cycle that may also intensify their dependence on tobacco. Empirical literature regarding the relationship between pain and smoking can be conceptualized as investigating whether the effects of smoking on pain or the effects of pain on smoking, with the latter trajectory receiving far less attention. This presentation reviews experimental, longitudinal, and cross-sectional findings relative to both the smoking-pain and pain-smoking perspectives. Some points of discussion include: the unique needs of smokers in pain, incorporating smoking cessation into pain treatments and addressing pain during smoking cessation, the utility of smoking as a model for addiction in the pain population, and the importance of future research and suggested directions.

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POS1-110 SNUFF USE AND RISK FOR HYPERTENSION AMONG NON-SMOKING BLACK SOUTH AFRICAN WOMEN

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Context: Smoking among black South African women is uncommon. The cardiovascular disease risk associated with snuff or smokeless tobacco use has previously not been reported in populations outside of developed economies.

Objective: To determine the association between snuff use and hypertension among non-smoking South African black women.

Design and Setting: Logistic regression analysis was carried out on a national sample of non-smoking black women of age 25-70 years who participated in the only South African Demographic Health Survey (n=3,725). Data on tobacco use pattern, exposure to domestic smoke fumes and exposure to dust and fumes, and environmental tobacco smoke (ETS) exposure (home and work) were obtained through a questionnaire. Three readings of respondents' blood pressure (BP) were taken.

Main Outcome Measure: Hypertension, defined as average BP of 160/95mmHg and/or being on antihypertensive medication.

Results: Mean (±SD) age of participants was 43.6 (±13.1) years. The prevalence of snuff use and hypertension was 15.6% and 17.6% respectively. Compared to nonsnuffers, snuffers had a significantly higher mean systolic (126mmHg vs. 120mmHg) and diastolic (81mmHg vs. 77mmHg) BP. Hypertension was more prevalent among snuffers than among nonsnuffers [23.6% vs. 16.5%; Unadjusted odd ratio [OR] =1.56 (95% CI; 1.20-2.02)]. However, in a multivariate analysis controlling for age and other socio-demographic and known risks for hypertension, snuff use lost statistical significance, with OR ranging between 0.92 (0.69-1.24) for use for 1-8 times/day and 1.91 (0.84-4.36) for use ≥8 times/day. Among other determinants of hypertension were obesity (4.53; 1.63-12.59) and exposure to smoke fumes (1.42; 1.02-1.97).

Conclusions: This study failed to demonstrate a significant association between snuff use and established hypertension. However, to the extent that snuff use significantly increased BP, and that small reductions in Diastolic BP of the order of 4mmHg at a population level have been suggested to significantly decrease cardiovascular disease risks, there is need for public health intervention to reduce snuff use prevalence in the studied population.

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POS1-111 PREDICTORS OF SMOKING CESSATION AND RELAPSE AFTER HOSPITALIZATION FOR ACUTE CORONARY SYNDROME


Purpose: Hospital admission for an acute cardiac event offers a unique opportunity for smoking cessation intervention. Investigating factors that predict and enhance post-discharge smoking cessation are needed.

Methods: A randomized, controlled trial was conducted in five hospitals in a Midwestern state to study hospitalized Acute Coronary Syndrome (ACS) smoking patients. Patients received a hospital quality improvement program (QI) including smoking cessation advice, a self-help kit, six sessions of post-hospital telephone counseling program (QI-plus; randomly assigned). Interview data were collected shortly after discharge, and at three and eight months to describe demographics, tobacco use, other behaviors, and medication use. Multinomial logit regression was used to predict smoking cessation, relapse and continued smoking.

Results: Of the 151 patients who smoked at hospitalization and participated in the baseline interview (28.8% of the sample), 15 were lost to follow-up. Of the 136 patients remaining patients, 45 (33.1%) continued to smoke at subsequent observations, 65 (47.8%) quit smoking and remained nonsmokers for the time of observation, and 26 (19.1%) quit smoking after hospitalization/baseline interview, but relapsed by follow-up. Predictors of successful quitting included no other smokers in the household (OR=5.00; p=0.001) and higher household income (OR=4.72; p=0.003). History of depression increased the odds of relapse (OR=6.38; p=0.02) and being a lighter smoker decreased the odds of relapse (OR=0.68; p=0.028). Cessation rates were 53% in the QI-plus group, 42% in the QI only group. Relapse rates were: 17% and 22%. With the sample size, we were unable to identify a statistically significant difference between groups.

Conclusions: This study demonstrated the effectiveness of hospital QI alone to be similar to the level of previous successful smoking cessation programs. Our findings suggest targeting follow-up programs to include other family members and using specialized methods for heavy smokers.

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POS1-112 HUMAN BRONCHIAL EPITHELIAL CELL TRANSCRIPTOME: EFFECTS OF CIGARETTE SMOKE AND VAPOUR PHASE IN VITRO AND THE GENERATION OF THE SEEK DATABASE


Associations between cigarette smoking and disease are well-documented and the effects of cigarette intake on the human lung epithelial transcriptome have been reported. However, little is known about the mechanistic basis of smoking-related disease at the cellular level. To dissect out the direct effects of smoke and to begin to understand the cellular basis of smoke toxicity it is necessary to perform in vitro studies. We have conducted transcriptomics studies using a 3-D air-liquid interface model of human tracheobronchial epithelium exposed to 2- sub-toxic doses of whole mainstream cigarette smoke and vapour phase. Whole genome data has been generated for 1, 6 and 24h post exposure timepoints using Affymetrix HGU133-2 arrays. For robust statistical analysis, 3 individual whole smoke experiments were performed with cells from each of 3 different donors. We have constructed an online relational database for storing, analysing and downloading microarray data from these smoke exposure experiments. The SEEK database (Smoke Exposure Experimental Knowledgebase), allows researchers without sophisticated bioinformatics and statistics training to execute queries and obtain biologically relevant results for further investigation. It also enables links for specific genes in the query results into internet based online resources such as NCBI’s website. The features of the database means that investigators can download a selection or all data files from selected microarray experiments and perform their own analyses for biological interpretation. Part of the data from this database has already been uploaded onto EBi’s ArrayExpress as supplementary data to a submitted manuscript. SEEK has a user friendly interface with the capability of data upload into the database as further experiments are performed by researchers in our laboratories, thus providing a ‘one-stop’ data management tool for real-time and future use.

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POS1-113 RELIABILITY OF RETROSPECTIVE RECALL OF RESPONSES TO FIRST USE OF TOBACCO

Janet Brigham*, Christina Lessov-Schlaggar, Ruth Krasnow, Harold Javitz, Gary E. Swan, SRI International

The Lifetime Tobacco Use Questionnaire (LTUQ) was designed to study the constellation of behaviors and influences believed to affect and predict tobacco use. The Web-based, password-controlled LTUQ examines use of nicotine and tobacco from early ages and initiates through current use, including retrograde and current use questions. We studied the psychometric properties of core LTUQ questions and modules—including responses to first use of tobacco—in a 2006 two-month test-retest reliability study. Randomly invited members of a Web panel completed the LTUQ in January and were reimbursed in March. The 514 ever-users who completed both LTUQ waves were 233 females and 288 males between ages 18-85, mean 42.7 yr (wave 1); 459 (Wave 1) and 468 (Wave 2) (kappa=.80) reported smoking at least 100 cigarettes lifetime. Recalled mean initiation age was 15.2 (Wave 1) and 15.3 (Wave 2) (r=.78, p<.0001). Response to first use of tobacco was assessed with 13 subjective questions rated 1 to 5, from “not at all” to “extreme.” Wave 1 to Wave 2 kappa for the measures were: dizzy (kappa=.29), lightheaded (.25), nauseated (.28), enjoyed (.25), coughed/choked (.26), liked taste (.31), felt bad (.27), relaxed (.19), irritated throat/lungs (.29), rush/buzz (.29), felt good (.20), difficulty inhaling (.24), and liked smell (.33) (all p<.0001). The kappa calculations do not necessarily reflect consistency of responses across waves; in many cases, responses varied by only 1 point between waves but were not computed as a match. Sex differences occurred in consistency across waves. Male recall was less consistent for “relaxed” and “difficulty inhaling” responses to initial use. Additionally, males reported age of first use less consistently than females, although between-wave responses varied by about 1 year for both sexes. Care is recommended in using initial-response questions, since reliability is low, though statistically significant. Examining response patterns and relative values may prove more meaningful than interpreting scores as absolute assessments. Nonetheless, administered and analyzed judiciously, these questions may provide useful insights into later tobacco use.

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POS1-114 EVALUATING DATA INTEGRITY IN RETROSPECTIVE RECALL OF LIFETIME TOBACCO USE
Janet Brigham, Christina Lessov-Schlaggar, Harold S. Javitz, Gary E. Swan, SRI International

The expansion of Web usage throughout much of the world makes Web-based research tools an affordable option. Additionally, respondents are more open about reporting less socially acceptable behaviors when interacting with a device rather than an interviewer. As Web-based research draws on anonymous respondents, particularly through opt-in rather than invitation-only panels, the risk of inadequate data integrity increases. This underscores the need to monitor online research input. We examined several indices of data integrity in a two-month test-retest psychometric evaluation of the lifetime Tobacco Use Questionnaire, a password-controlled, Web-based tool for studying tobacco use and risk factors across the lifespan. A randomly invited panel sample of 782 men and women ages 18-85 with varying tobacco histories (from none to heavy) completed the LTUQ in two waves. Some 16 (2%) of respondents reported gender varying across waves, 26 (3%) reported current age differing by more than 1 year across two-month retest interval, and 16 (2%) retrospectively reported age of tobacco initiation differing by more than 2 years (range 2 to 50 years difference). Median completion time for those with more than one mismatched independent, to be more engaged in the first use) was 11.5 min (Wave 1) and 10.5 min (Wave 2), whereas median completion time for valid cases was 16.0 min (Wave 1) and 14.7 min (Wave 2). Consequently, 23 (2.9%) cases were excluded for multiple mismatches. Threats to data integrity include carelessness and poor recall, while some mismatched cases may have occurred because respondents shared computers or failed to follow instructions. When panel members’ continuing participation with an invitation-only sample provider depends on their providing usable data, the incentive for dishonest reporting can be minimized. Researchers need not avoid Web-based instruments because of data integrity concerns. Rather, they can utilize automated tools to monitor response patterns such as “straight-line” grid responses, unduly fast response speed showing lack of thought about questions, and other indications of inadequate response.

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POS1-115 A FORMATIVE EVALUATION OF AN EMAIL-BASED PROGRAM FOR SMOKING CESSATION IN YOUNG ADULTS
Lorien C. Abroms, Sc.D., Richard Windsor, Ph.D., George Washington University School of Public Health and Health Services; Bruce Simons-Morton, Ph.D., National Institute of Child Health & Human Development, National Institutes of Health

Objective: Young adulthood represents a distinct period in the lifespan. Young adult smokers have the highest level of interest in quitting smoking and are more likely to try to quit smoking than other adult smokers. Yet, few smoking cessation programs exist for this sub-group.

Methods: The High-Five Study was designed to estimate the efficacy and acceptability of an email-based smoking cessation program aimed at young adults. Participants were randomized to receive either a young adult program or a generic program. The young adult program consisted of one in-person counseling session, a self-help smoking cessation kit, and a series of counseling emails (X-Pack group: N=48). The generic program consisted of one in-person counseling session and a standard self-help guide on quitting smoking (Clearing the Air (CTA) group: N=35).

Participants were assessed at baseline and at 3 and 6 months post-enrollment. Results: Participants in the X-Pack group were found to rate their treatment more favorably overall, to be more engaged in the quitting process, and to have quit for more consecutive days at 3 and 6 months follow-up. No significant differences were found in quit rates between the groups at either timepoint.

Conclusion: These findings offer some support for a program targeted to young adults, which includes email and a self-help kit.

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POS1-116 IS PROACTIVE RECRUITMENT OF SMOKERS TO A COMPUTER-TAILORED INTERVENTION FOR SMOKING CESSSION FEASIBLE IN PRIMARY CARE?
Hazel Gilbert*, Ph.D., Irwin Nazareth, M.B.B.S., Ph.D., University College London, Stephen Sutton, Ph.D., University of Cambridge

While specialist clinics, offering intensive therapy, are available through the NHS, most smokers prefer less intensive methods. Self-help materials can bridge the gap between face-to-face support and public health campaigns, but these generic “one-size-fits-all” materials do not address the needs of the individual. Computer-generated self-help materials can be tailored to the individual, and can also take into account issues such as level of education, to address the social and socio-economic gradient in smoking prevalence. In addition, a proactive recruitment strategy can target areas of high deprivation, and also reach and raise awareness in the many smokers who have no serious intentions to attempt to quit. We assessed the feasibility of delivering suitably adapted tailored feedback in primary care in a pilot trial, using a proactive recruitment strategy. Method: Four general practices were recruited to participate and smokers identified from records. Questionnaires were sent to a random sample (n=876). Results: The recruitment strategy yielded a response rate of 8.9%. A high proportion of respondents were not planning to quit within the next month (42.3%) or at all (32.1%). However, 52.6% were qualified to at least degree level. Conclusion: A positive response from practices demonstrated their willingness to participate in the delivery of an intervention for smoking cessation. The recruitment strategy encouraged response from less motivated quitters, but more areas of high deprivation should be targeted, and more strategies employed to increase response rates in the ensuing large trial evaluating the effectiveness of this intervention.

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POS1-117 REACHING AND TREATING LGBT SMOKERS: DOES THE INTERNET WORK?
Gary Humfleet, Ph.D.*, Sharon Hall, Ph.D., Ricardo Munoz, Ph.D., University of California San Francisco; Greg Greenwood, Ph.D., United Behavioral Health

Data indicate that lesbian, gay, bisexual, and transgender (LGBT) populations have higher smoking rates compared to the general population and may be at increased risk for psychosocial issues that predict smoking treatment failure. However, little data are available regarding smoking cessation among this group. The present study examines the efficacy of Internet-based smoking treatment for LGBT smokers and examines variables that may predict smoking treatment success. 793 LGBT smokers completed a baseline features such as level of education, to address the social and socio-economic gradient in smoking prevalence. In addition, a proactive recruitment strategy can target areas of high deprivation, and also reach and raise awareness in the many smokers who have no serious intentions to attempt to quit. We assessed the feasibility of delivering suitably adapted tailored feedback in primary care in a pilot trial, using a proactive recruitment strategy. Method: Four general practices were recruited to participate and smokers identified from records. Questionnaires were sent to a random sample (n=876). Results: The recruitment strategy yielded a response rate of 8.9%. A high proportion of respondents were not planning to quit within the next month (42.3%) or at all (32.1%). However, 52.6% were qualified to at least degree level. Conclusion: A positive response from practices demonstrated their willingness to participate in the delivery of an intervention for smoking cessation. The recruitment strategy encouraged response from less motivated quitters, but more areas of high deprivation should be targeted, and more strategies employed to increase response rates in the ensuing large trial evaluating the effectiveness of this intervention.

Research supported by the North Central London Research Consortium (NoCoLR).

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POS1-118  OUTCOME OF A WEB DELIVERED CESSATION PROGRAM FOR SMOKELESS TOBACCO USERS
Herbert H. Severson*, Judith Gordon, Brian Danaher, Shawn Boles, Laura Aker, Oregon Research Institute, Eugene, Oregon

While the majority of smokeless tobacco (ST) users quit on their own, a Web-delivered cessation program specifically designed for the ST user has never been empirically evaluated for efficacy. In this randomized control trial (RCT) participants were recruited through thematic promotional mailings to media outlets in 31 states with a high prevalence of ST users. We also used paid online advertising and targeted mailings to state tobacco control organizations and professionals. Participants completed consent and enrollment online, and were randomized to either a website that provided linear, text-based ST cessation information (Basic Condition) or an interactive, tailored ST cessation program (Enhanced Condition) that offered streaming video, tailored cessation planning and social support via two forums (social support forum and an “Ask the Expert” forum). We enrolled 2,523 participants over a 15-month period. Outcome analyses examined self-reported tobacco cessation at 3- and 6-month follow-up. Results showed that point prevalence of self-reported tobacco cessation among responders in the Enhanced Condition was significantly greater than for those in the Basic Condition at 3 months (44% vs. 27% p < .001) and 6 months (46% vs. 31%, p < .001). Results using intent to treat analysis similarly favored the Enhanced condition (3 mo., 20% vs. 14%, p < .001, 6 mo., 19% vs. 15%, p = .001). These quit rates compare favorably with other self-help ST quitting programs. We conclude that Web-based programs can offer broad access to cessation assistance for ST users who may not have access to other cessation support. Our cost analysis indicates that the incremental costs (excluding site development) of offering this program to ST users is very nominal. This is the first RCT to show the efficacy of a Web-based cessation program for ST users. We also report participant exposure data and baseline characteristics that were predictive of quitting. Noteworthy limitations include the high attrition for follow up assessments and the lack of biochemical verification of self-reported cessation.

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POS1-119  EXPLORING THE PERCEPTION OF COMPUTER TAILORED FEEDBACK REPORTS TO ENCOURAGE SMOKING CESSATION
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In the field of smoking cessation, computer-tailored feedback, derived from an individual assessment and based on characteristics unique to one person, can fill the gap between generic self-help and intensive clinical therapy. Proactive recruitment can also be used to recruit a more representative sample, and encourage awareness in less motivated quitters. However, smokers’ perceptions of this type of self-help and the acceptability of this method of recruitment have not been explored. This study attempted to gain an insight into the views of smokers in the general population on their perception and understanding of computer tailored self-help materials as an aid to quitting.

Method: Smokers’ perceptions of self-help materials and computer-generated individually tailored feedback reports were explored in four focus groups, with smokers selected to represent different socio-economic backgrounds.

Results: Participants recognised the generic nature of self-help material and the need for a more personal approach. The concept of personal support and the principle of tailoring was found acceptable by the majority of participants, although some concerns were raised about the content of the material and the credibility of the source of the advice.

Conclusion: Findings supported the continuation of the development and delivery of computer-tailored feedback but more research is warranted to investigate the optimal content and the interpretation and delivery of printed feedback based on the principles of counselling.

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POS1-120  DEVELOPING A WEB TOOL TO MAXIMIZE USE OF SURVEILLANCE DATA
Rosanna V. Morales, M.Sc.*, University of Toronto; Steve R. Manske, Ed.D., Centre for Behavioural Research and Program Evaluation; Jose F. Arocha, Ph.D., Don Cowan, Ph.D., University of Waterloo

Background: The School Health Action Planning and Evaluation System (SHAPES) is an innovative local data collection and feedback system. SHAPES involves: (1) a machine-readable questionnaire; (2) a quality controlled scanning process; (3) and a computer generated feedback report. Modules addressing tobacco use, physical activity and eating behaviours exist. This study was designed to guide the development a web tool to simplify access to and analysis of SHAPES data, beginning with tobacco use data.

Objective: Primary objectives were to examine what data or information potential end-users (i.e., researchers, public health practitioners, and educators) would find useful to support their work related to youth tobacco control and how they would like to use data or information provided.

Methods: Research proceeded in two phases. In Phase 1, a pilot-tested, web-based questionnaire was administered to a purposeful sample of participants from research, public health, and education working in youth tobacco control from Western, Central, and Eastern Regions of Canada (N=43). Data were analyzed using frequency calculations and cross-tabulations by participant roles. Questionnaire results guided the creation of a prototype tested in Phase 2. In-depth interviews were conducted with a subset of participants (N=6) to validate the prototype and identify further functionalities. Data were analyzed using content analysis.

Results: Useful prototype functions identified varied slightly across roles. Research participants felt that access to raw data was a useful function. Public health practitioners were interested in accessing data and creating summary reports of data. Educators were mostly interested in obtaining summary reports of data.

Implications: This research has provided important insights that will guide the development of a functional web tool. This tool will enable users to identify effective interventions, track the progress of school or health regions relative to benchmarks, and identify high-risk schools to target intervention efforts. This tool is an innovative way to maximize the use of available surveillance data.

This research was funded by: (1) Canadian Institutes for Health Research-Strategic Training Program in Tobacco Control Research Award (Rosanna V. Morales); (2) Centre for Behavioural Research and Program Evaluation. This research was conducted at the Centre for Behavioural Research and Program Evaluation located at the University of Waterloo, Canada.

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POS1-121 TRANSFORMING HEALTH PROFESSIONAL STUDENTS’ TOBACCO CESSATION EDUCATION THROUGH A DISTANCE EDUCATION COURSE

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If tobacco use is addressed between a patient and health care provider, the rates of cessation improve. Unfortunately, only 20% of patients report that tobacco cessation was discussed during a health care encounter. One explanation is due to inadequate training of health care practitioners. This project developed a dedicated, online course for both pharmacy and nursing students. The semester long course is taught as a series of independent, asynchronous, online modules; hosted through Web CT. Students spend 1-2 hours per week engaged in coursework. The online learning technology includes: Web-based modules, combined video and graphic streaming, discussion boards, written assignments submitted electronically, online quizzes, and web links to other informational resources. Course content in the 3 modules, which are presented visually with accompanying audio, were from the Rx for Change: Clinician-Assisted Tobacco Cessation program. Students completed online pre- and post-assessments surveys and had the ability to counsel patients on tobacco use. Five items address the students’ counseling skills about the 5 As. Eleven items address students’ self-efficacy to provide tobacco cessation counseling. All items were scored on a 5-point Likert scale (range, 1=not at all confident to 5=Extremely confident). Domain scores for the 5 As and self-confidence were calculated, and Wilcoxon Signed Ranks test compared linked pre- and post-course responses. A pilot offering for the course was delivered during Spring 2006. Nine students successfully completed the course. Overall, there was a significant improvement in students’ skills and self-confidence to provide tobacco cessation counseling to patients. Mean item scores were 2.4 before and 3.7 after the course (p=0.027) for the 5 As and 2.0 before and 3.9 after the course (p=0.027) for self-confidence. In conclusion, this online course enables the provision of online tobacco cessation education. The pilot results suggest that exposure to the program improves students’ self-reported ability to counsel patients. Expansion of the course across other disciplines and continued assessment of student outcomes is warranted.

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POS1-122 E-LEARNING: AN EFFECTIVE COMPONENT IN ARIZONA’S TOBACCO TREATMENT SPECIALIST CERTIFICATION PROGRAM


E-learning is vital in meeting the challenges and opportunities posed by the rapid development of information technology. E-learning potentially lies in the use of the Internet to deliver a broad array of learning modalities that enhance knowledge and performance. E-learning can potentially reach diverse audiences and facilitate focus in busy environments. Since its creation in 1998, the HealthCare Partnership (HCP) at The University of Arizona, has administered the Arizona Tobacco Dependence Treatment Continuing Education and Certification Programs. Over 11,000 individuals have participated in these programs since its inception. In 2000, the HCP incorporated e-learning in its educational offerings by creating the Online Tobacco Treatment Specialist Certification as an integral part of its Tobacco Treatment Specialist Certification. The Arizona Online Tobacco Treatment Specialist Certification follows the U. S. Public Health Service Clinical Practice Guideline: Treating Tobacco Use And Dependence (2000), and provides education and certification in areas such as tobacco and health, pharmacological treatments, complimentary and alternative therapies, counseling clients, treatment planning, group facilitation, recruitment and retention, assessment, and ethnic/racial diversity. Individuals gain knowledge, skills, techniques and strategies to offer intensive tobacco treatment services within the structure of an existing program, as well as to act as a resource on tobacco dependence treatment for other health professionals. Data from December 2000–June 2006 describing over 1000 participants were reviewed to assess the effectiveness of the online educational intervention. The e-learning measures include participant demographics, knowledge, self-efficacy, and satisfaction. Participants report significant increases in self-confidence as well as high levels of satisfaction with the educational modality. Arizona’s Online Tobacco Treatment Specialist Program suggests e-learning is a promising method for broad, population based diffusion of evidence based tobacco cessation education and certification.

Arizona Department of Health Services Office of Tobacco Education & Prevention Program; American Legacy Foundation.

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POS1-123 THE EFFECT OF FILTER VENT BLOCKING, SMOKING TOPOGRAPHY AND FILTER TAR STAIN SCORING ON CARBON MONOXIDE BOOST

Andrew A. Strasser*, Paul M. Sanborn, Kathy Z. Tang, Jon Y. Zhou, Transdisciplinary Tobacco Use Research Center, University of Pennsylvania.

Research on the effect of filter vent blocking when smoking ventilated cigarettes has been mixed. Studies of smokers have reported that filter vent blocking increases carbon monoxide (CO) boost when smoking highly-ventilated ultra-light cigarettes; but no increase in CO boost from blocking filter vents when smoking moderately-ventilated light brand cigarettes. Yet, when light cigarettes are machine-smoked, filter vent blocking increases carbon monoxide boost compared to unblocked testing conditions, thus supporting that filter vent blocking is capable of increasing CO exposure from light cigarettes. Two potential reasons for the discrepancy between human and machine smoking studies may be due to brand switching, and the need to categorize smokers as blockers and non-blockers. The current study recruited 25 current smokers of Marlboro Lights (ML) cigarettes to complete a two session study using ML cigarettes, thereby eliminating the confound of brand-switching. Participants smoked two ML with blocked filter vents (BL) and two ML with unblocked filter vents (UN) at each session. A smoking topography device was used during one session and not at the other session; order counter-balanced. Participants returned used cigarette filters collected between sessions. Filter tar stain patterns were scored by trained raters for evidence of blocking or non-blocking (inter-rater reliability alpha = .88). Repeated measures ANOVA indicates a significant interaction effect for participant blocking categorization (BL vs. UN) by blocking condition in the laboratory (BL vs. UN), (F(2, 25) = 5.46, p=.03). Those who typically block their filter vents had the greatest CO boost when smoking BL ML in the laboratory, and the lowest CO boost when smoking UN ML. Conversely, those who do not typically block filter vents had greater CO boost when smoking UN compared to BL, an effect due to taking a smaller volume of smoke when smoking the BL cigarette. Results illustrate the importance of considering individual differences in typical smoking variation and suggest that filter vent blocking likely does increase CO exposure for those who typically block filter vents on light cigarettes.

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POS1-124 CIGARETTE FILTER COLOR AS AN ESTIMATOR OF CIGARETTE TAR YIELD

Michael J. Morton, Ph.D.*, and David L. Williams, M.S., Philip Morris USA Inc.

The FTC machine-smoking method for determining cigarette smoke yield was developed by the FTC in 1967 in order to provide a consistent standardized methodology for comparing cigarette brands. As reported by the FTC, this method was not intended to reflect what any individual human smoker would receive when smoking a cigarette (FTC “Statement of Considerations.” Press release, August 1, 1967). Given the wide variation in smoking behavior among smokers, no machine-method can accurately predict what human smokers will get from a cigarette. Kozlowski and others proposed using the filter color at the mouth end of a smoked cigarette as a vehicle for providing smokers with individualized yield information (Kozlowski, et al., AJPH 72: 597-599, 1982). Following up on this earlier work, we first investigated the relationship between filter color and cigarette tar yield from machine-smoked cigarettes and found that filter vent blocking is capable of increasing CO exposure from light cigarettes. Two panelists reported on how filter vent blocking increases CO boost compared to unblocked testing conditions, thus supporting that filter vent blocking is capable of increasing CO exposure from light cigarettes. Two cigarette brands were used for the study: Marlboro Lights (ML) and Marlboro Master Blend (MB).

Results illustrate the importance of considering individual differences in typical smoking variation and suggest that filter vent blocking likely does increase CO exposure for those who typically block filter vents on light cigarettes.

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POS1-125  NNK FORMS IN AGING SIDESTREAM CIGARETTE SMOKE

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In previous studies of unpublished research from the tobacco documents, we have shown that sidestream cigarette smoke (the smoke emitted from the cigarette between puffs) becomes more toxic, per gram of total particulate matter, as it ages. To find out how sidestream cigarette smoke might become more toxic over time, we searched the tobacco documents for research on the most toxic and carcinogenic compounds in sidestream. Tobacco-specific nitrosamines (TSNAs) are a group of highly carcinogenic compounds that are formed exclusively from nicotine and the other alkaloids found in tobacco. A common TSNA, NNK, is the only tobacco carcinogen whose breakdown products are consistently found in nonsmokers who are exposed to secondhand smoke and is among the strongest nitrosamine carcinogens known. Unpublished research from Philip Morris demonstrates that NNK can form in sidestream cigarette smoke after it has been released into ambient air. Between 1963 and 1997, experiments done in a stainless steel test chamber repeatedly demonstrated that airborne NNK concentrations in sidestream cigarette smoke can increase by up to 200% per hour. Studies done in a furnished office show that NNK concentrations persist at elevated levels despite normal abiotic losses to surfaces. Our findings suggest that NNK formation in aging sidestream cigarette smoke may account for at least part of its increased toxicity.

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POS1-126  THE IMPACT OF CANADA’S LOWERED IGNITION PROPENSITY REGULATIONS ON SMOKING BEHAVIOUR & CONSUMER PERCEPTIONS

David Hammond*, Richard J. O’Connor, Gary A. Giovino, Geoffrey T. Fong, Carla Parkinson; University of Waterloo (DH, GTF, CP) and Roswell Park Cancer Institute (RJO, GAG).

Fires caused by smoking materials are the leading cause of fire-related death in Canada. The technology to manufacture “fire-safer” cigarettes has existed for several decades; however, the industry has failed to implement these designs for fear of litigation or consumer rejection. In October 2005, Canada became the first country and only the second jurisdiction in the world after New York State to legislate lowered ignition propensity (LIP) cigarettes. Although extensive testing both in Canada and elsewhere suggests that the new restrictions will reduce the ignition propensity of cigarettes, tobacco manufacturers have opposed the legislation on the grounds that the changes required to design LIP cigarettes may be more toxic to smokers. The current study collected measures of smoking behavior among 41 Canadian smokers immediately before and 10-months after the introduction of Canada’s LIP law. Participants smoked their usual cigarette brands through a CReSSmicro device for a 24-hour period, provided an exhaled breath carbon monoxide sample, and completed a brief questionnaire at baseline and follow-up. No significant increases were observed in carbon monoxide “boost” or the intensity of puffing behavior between baseline and follow-up. Changes in consumer perceptions, fire-related worries, and cigarette fire incidents will also be presented. To our knowledge, these findings represent the first independent evaluation of smoking behavior in response to LIP cigarette regulations.

Roswell Park Cancer Institute Transdisciplinary Tobacco Use Research Center (1SPOCA111236).

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POS1-127  PRODUCT CHARACTERISTICS AND SMOKE CHEMISTRY: COMPARISONS ACROSS 10 COUNTRIES OF THE INTERNATIONAL TOBACCO CONTROL POLICY EVALUATION PROJECT

Richard J. O’Connor, Ph.D.*, and K. Michael Cummings, Ph.D., Roswell Park Cancer Institute; Gary A. Giovino, Ph.D., State University of New York at Buffalo; Ann McNeill, Ph.D., University of Nottingham; David Hammond, Ph.D., and Geoffrey T. Fong, Ph.D., University of Waterloo.

Cigarette design in the United States and other Western markets has undergone significant change over the past 50 years in response to concerns about the risks of smoking. The same process is now under way in many developing countries as public awareness of the health risks continues to grow, along with interest in quitting. However, little or nothing at all is known about the characteristics of products sold in other countries. We present data on cigarette characteristics and smoke chemistries in the United States, Canada, Australia, U.K., Malaysia, Thailand, China, South Korea, Greece, and Czech Republic. Filter ventilation is the predominant design feature determining the variation in standard ISO tar, nicotine, and CO yields on major brands in the four Western countries. Chinese brands in the 11-15mg and 7-10mg tar classes were significantly less ventilated than equivalent brands in other countries. Examination of design features and objective characteristics of Czech and Greek cigarettes appeared to have similar design features and physical characteristics as U.K. brands and to have similar ISO and Canadian Intensive smoking machine yields as Canadian cigarettes. There were greater tar- and CO- per unit nicotine ratios in Czech and Greek cigarettes, relative to Canadian cigarettes, under both smoking regimens, with the differences between regimes being more pronounced in Czech Republic and Greece than in Canada. Thai and Malaysian brands were of similar construction to brands available in the US, UK, Canada, and Australia. Thai and Malaysian cigarettes were more densely packed than those of the U.S., Canada, U.K., and Australia (p<0.001). Thai and Malaysian cigarettes did not differ in weight or rod length, suggesting that the greater density reflects the use primarily of leaf rather than the use of expanded tobacco or reconstituted sheet. The Framework Convention on Tobacco Control (FCTC) provides governments the opportunity to regulate the marketing, labeling, and contents/emissions of tobacco products. These findings highlight the importance of measuring and understanding cigarette design to inform tobacco product regulations as called for under the FCTC.

National Cancer Institute of the U.S. (P50 CA111236, Roswell Transdisciplinary Tobacco Use Research Center).

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POS1-128  COMPARATIVE CONSTRUCTION OF AUSTRALIAN AND U.S. CIGARETTES

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We used data from Philip Morris documents to compare the Australian and U.S. cigarette markets in terms of construction and performance, matching an Australian data set from 1994 (102 brands) with a U.S. data set from 1993 (204 brands). These data revealed marked differences between the two markets, aside from the Australian market being predominantly Virginia and the U.S. predominantly blended. The Australian market had a much lower sales weighted mean tar yield (6.77mg vs 12.62mg). Regression analyses showed filter ventilation accounted for substantially more variance in the tar and nicotine yields of Australian brands than U.S. brands (94% and 90% vs 81% and 75%). Multivariate analyses were able to account for more of the variance in tar and nicotine yields of Australian brands than U.S. brands (97% and 95% vs 93% and 89%). Australia-U.S. differences persisted when comparisons were confined to those U.S. brands in the same tar yield and length ranges as the Australian brands. We need greater knowledge about whether the by-country differences in engineering we found have been sustained over time and whether they capture any adaptive differences in smoking behaviours and exposures to harmful smoke constituents.

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POS1-129 ADVANCES IN CIGARETTE IGNITION PROPENSITY RESEARCH AND DEVELOPMENT

Objective: Previous internal industry documents research revealed that reduced ignition propensity cigarettes (IP) were developed by manufacturers despite their coordinated political strategy to block fire-safe cigarette legislation. Legislation of cigarette IP performance standards should be informed by the most current science. This research identifies recent industry advances pertaining to cigarette IP and its evaluation.

Methods: Internal tobacco industry documents made publicly available through the 1998 Master Settlement Agreement were researched using the web based Legacy Tobacco Documents Library and Tobacco Documents Online.

Results: Industry cigarette IP research and development beyond the National Institute of Standards and Technology (NIST) and American Society for Testing and Materials standards includes recent program whose objectives were to: (a) improve the science base for evaluation of cigarette IP by identifying cigarette thermal parameters that may provide a basis for indicating relative IP; and (b) characterize the current NIST IP tests using complementary techniques and identify scientifically sound quantitative alternatives or improvements. Advances include: (a) use of non-contact infrared radiometry and thermal non-destructive evaluation to measure radiant flux along position of burning cigarettes and the relative radiated power with banded and non-banded paper; (b) evaluation of the thermal performance of banded paper cigarettes and demonstration of the ability of banded cigarettes to modulate radiant flux; and (c) identification of parameters which may be useful as indicators of relative IP. Important findings include band width may be more important in IP behavior than band spacing.

Supported by the American Legacy Foundation.
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POS1-130 PERCEPTIONS AND BEHAVIORS OF ROLL-YOUR-OWN CIGARETTES AMONG UK RYO SMOKERS

A quarter of smokers in the UK now smoke roll your own cigarettes but little is known about their attitudes, behaviour and smoke intake in comparison with smokers of manufactured cigarettes. This presentation draws on data from 29 smokers of the most popular rolling tobacco brand in the UK in comparison with 131 smokers of 7 manufactured cigarette brands spanning the range of tar yields allowed in the UK. This study examined a number of different measures of smoking including self-reported smoking and quitting behaviour, puffing parameters when using the CRESSmicro puffing topography device over a 24 hour period, cigarette but analysis using imaging to estimate smoke intake and measurement of a number of different biomarkers. It also examined machine smoke deliveries of nicotine, carbon monoxide, tar, tobacco-specific nitrosamines and polyaromatic hydrocarbons using the ISO and Health Canada’s Modified ISO protocols as well as using human puffing parameters derived from the CRESSmicro data. The feasibility of doing such a study with roll your own cigarettes is discussed including the particular issues relating to use of the CRESSmicro device. The size (such as diameter of the cigarette) and puffing parameters used for machine tests of roll your own cigarettes will be compared with those measured from the roll your own smokers in this study. Data on puffing parameters will be compared with that of manufactured cigarette smokers. Cotinine and carbon monoxide data from the roll your own smokers will be compared with that from smokers of the manufactured cigarettes, controlling for cigarette consumption. The emissions of smoke toxicants, including tobacco-specific N-nitrosamines NNK and NNN, are predominantly determined by tobacco blend and cigarette design. To promote the implementation of the provisions of the WHO Framework Convention on Tobacco Control (FCTC), especially Articles 9, 10, and 11 which emphasize product regulation as a pillar of global tobacco control efforts, the WHO TFU/ARC Working Group I has been charged to develop recommendations on maximal limits for select toxic constituents in the mainstream smoke of cigarettes. This presentation will discuss criteria for selecting smoke constituents for maximal limits consideration, including scientific evidence on toxicity, availability of technology, or other approaches that can reduce the level of specific constituents per mg nicotine in the smoke, and the substantial variability in constituent yield across the brands on the market. In order to standardize the levels of toxicants across brands, they are expressed per mg nicotine yield for the brand. The variation of NNN and NNK per mg nicotine is defined using data from an international sample of Philip Morris brands published by Counts et al., 2004. Examination of the levels of NNN and NNK, measured using the Canadian intense machine smoking protocol, reveals that the median levels of NNN and NNK in the Philip Morris brands tested are approximately 114 and 72 nanograms per mg nicotine, respectively. The maximal limit values would be applied to the mean value measured for a given brand. As additional scientific information and data on constituents from a wider range of brands and geographic areas become available, these recommendations are likely to be modified and extended to other constituents. This project is jointly funded by the World Health Organization Tobacco Free Initiative and International Agency for Research on Cancer.

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POS1-131 SETTING MAXIMAL LIMITS FOR TOBACCO-SPECIFIC N-NITROSAMINES EMISSIONS IN CIGARETTE SMOKE
David Burns, M.D., University of California San Diego; Erik Dybing, M.D., Ph.D., Norwegian Institute of Public Health; Mirjana V. Djordjevic*, Ph.D., National Cancer Institute; Carolyn Dresler, M.D., International Agency for Research on Cancer, France; Yumiko Mochizuki-Kobayashi, Ph.D., WHO, Tobacco Free Initiative, Switzerland

The emissions of smoke toxicants, including tobacco-specific N-nitrosamines NNN and NNK, are predominantly determined by tobacco blend and cigarette design. To promote the implementation of the provisions of the WHO Framework Convention on Tobacco Control (FCTC), especially Articles 9, 10, and 11 which emphasize product regulation as a pillar of global tobacco control efforts, the WHO TFU/ARC Working Group I has been charged to develop recommendations on maximal limits for select toxic constituents in the mainstream smoke of cigarettes. This presentation will discuss criteria for selecting smoke constituents for maximal limits consideration, including scientific evidence on toxicity, availability of technology, or other approaches that can reduce the level of specific constituents per mg nicotine in the smoke, and the substantial variability in constituent yield across the brands on the market. In order to standardize the levels of toxicants across brands, they are expressed per mg nicotine yield for the brand. The variation of NNN and NNK per mg nicotine is defined using data from an international sample of Philip Morris brands published by Counts et al., 2004. Examination of the levels of NNN and NNK, measured using the Canadian intense machine smoking protocol, reveals that the median levels of NNN and NNK in the Philip Morris brands tested are approximately 114 and 72 nanograms per mg nicotine, respectively. The maximal limit values would be applied to the mean value measured for a given brand. As additional scientific information and data on constituents from a wider range of brands and geographic areas become available, these recommendations are likely to be modified and extended to other constituents. This project is jointly funded by the World Health Organization Tobacco Free Initiative and International Agency for Research on Cancer.

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POS1-132 A 32-COUNTRY COMPARISON OF WORKPLACE TOBACCO SMOKE EXPOSURE
Mark J. Travers*, Andrew Hyland, Cheryl Higbee, K. Michael Cummings, Roswell Park Cancer Institute; Carolyn Dresler, International Agency for Research on Cancer

Background: The Framework Convention for Tobacco Control (FCTC) calls for countries to adopt measures providing protection from exposure to tobacco smoke. The first comprehensive nationwide policies took effect in 2004, although the vast majority of nations lack comprehensive policies. The aim of this study was to conduct indoor air quality measurements in 30 countries with different regulations to provide a comparison of secondhand smoke levels.

Methods: The TSI Sidepak was used to measure the level of particulate matter less than 2.5 microns in diameter (PM2.5) in pubs, restaurants, retail outlets, transportation venues, and other workplaces in countries of varying economic development around the world. PM2.5 are harmful fine particles that are easily inhaled deep into the lungs and are emitted in large quantities from burning cigarettes. Collaborators in each country were trained through a joint effort between the International Agency for Research on Cancer and Roswell Park Cancer Institute. Countries in this study include Armenia, Australia, Belgium, Brazil, Canada, China, Egypt, France, Germany, Greece, Iceland, Laos, Lebanon, Malaysia, Mexico, New Caledonia, New Zealand, Pakistan, Poland, Portugal, Romania, Russia, Singapore, Spain, Syria, Thailand, Tunisia, United Kingdom, United States, Uruguay, Venezuela, and Vietnam.

Results: The PM2.5 level in establishments where smoking is permitted are 9 times greater than the level in places where smoking is prohibited and on average these levels were far greater what the US Environmental Protection Agency has concluded is harmful to human health. The only countries with acceptable indoor air quality on average were the two with national comprehensive smoke-free air policies, New Zealand and Ireland.

Conclusions: Levels of indoor air pollution in places that allow smoking are typically at hazardous levels. Comprehensive smoke-free regulations are the most effective strategy to reduce secondhand smoke exposure. These findings underscore the importance of compliance with the FCTC provision for protection from exposure to tobacco smoke.

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POS1-133 IMPACT OF EXCISE TAX INCREASE AND PASSAGE OF COMPREHENSIVE CLEAN INDOOR AIR LAW ON TOBACCO USERS’ UTILIZATION OF TREATMENT


Studies have shown that increased cigarette excise taxes and clean indoor air laws decrease tobacco consumption and smoking prevalence, but none have looked at whether such policies impact utilization of cessation programs. In 2005, Washington State enacted a 60-cent per pack cigarette excise tax increase in July and a public smoking ban in December. This study analyzed enrollment data of WA residents who registered for the Free & Clear telephone-based program for two months before and four months after these events to assess characteristics of enrollees and compare enrollment volumes with the same time periods the previous year. Analysis of 6932 registrants from 5/1/05-8/31/05 demonstrated significant differences in mean number of cigarettes smoked per day by enrollees in the two months before (13.9) and two months after (15.4) the excise tax increase (p<.0001). The proportion of enrollees in pre-contemplation stage increased after the tax went into effect (p=.01). Among 6288 enrollees from 9/8/05-1/5/06, those who called in the two months after the ban passed, similar to those after the tax, were found to be heavier smokers compared to those who registered prior to the law (18.1 vs. 16.7 cpd; p<.0001). In contrast to the excise tax, a marked increase in the proportion of enrollees who were in action or maintenance stage was found following passage of the smoke free law (11.6% vs. 8.4%, p<.0001).

Enrollment changed in the month following the excise tax but was not different than the year before (both 5% increase) although enrollments increased 77% in the month following passage of the public ban compared to 60% the year before. Of 5,335 registrants from 12/8/05-3/31/06 asked whether their decision to call was related to the new smoke-free law, nearly a fifth (19.7%) said yes. Increased cigarette taxes and smoke-free policies may lead more extrinsically motivated, heavier smokers to seek cessation services through a quit line. Further research on population-based tobacco control programs is needed to inform how treatment programs can modify their staffing and tailor their services to meet changes in demand for those seeking treatment as a result of these initiatives.

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POS1-134 HOW DO HOUSEHOLD SMOKING RESTRICTIONS INFLUENCE ADOLESCENT SMOKING?

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It is well established that exposure to family and peers smoking increases the likelihood of adolescent smoking. However, when smoking is restricted at home (e.g., parents must smoke outside) adolescents are less likely to smoke or to smoke at higher levels, even if the parents smoke. We proposed that this effect results from a decreased likelihood of associating with peers who smoke; smoking restrictions influence adolescent smoking indirectly through its effect on peers smoking. We tested this hypothesis in a Structural Equation Model (SEM) with a sample of 168 adolescents (51% male, 95% Caucasian) aged 15-18 years old, from a suburban South Eastern Pennsylvania community, who lived with at least one household member who smokes. Participants were taken from a two year cohort study (n=406) of the relationship between health habits and smoking. Of the 166 study participants, 49% lived in households not permitting any smoking indoors. Regarding adolescent smoking, 71% did not smoke in the last month. Of these, 66% had never experimented with smoking, not even a puff of a cigarette. Thus, 47% of participants were never smokers. However, 20% were daily smokers, including 7% smoking more than 11 cigarettes per day. Regarding peer smoking, 42% of participants had a best friend who smokes, and on average had 1.25 (SD=1.50) other best male and 1.56 (SD=1.58) other best female friends who smoke. The SEM fit the data well, Chi square = 5.69, p=.46, RMSEA=0.00, WRMR=.35. Moreover, the indirect effect from household smoking restrictions to adolescent smoking through peer smoking was significant (Beta=-.552, 95% CI=.88, -.22), indicating that living in a household with smoking restrictions was indeed associated with a reduced likelihood of having peers who smoke, and this in turn was associated with a reduced likelihood of smoking. The findings of this study highlight the importance of evaluating the social context of smoking, and suggest that household smoking restrictions may be an important vehicle for reducing youth smoking, particularly in communities with high prevalence of smoking.

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POS1-135 PARENTS AS FRIENDSHIP FORMATION GATEKEEPERS: PARENTAL ANTI-SMOKING COMMUNICATION AND SELECTION PROCESSES IN ADOLESCENTS’ FRIENDSHIPS

Rebecca N.H. de Leeuw, Ron H.J. Scholte, Zeena Harakeh, Jan F.J. van Leeuwe and Rutger C.M.E. Engels

The aim of the present study was to investigate whether parents’ anti-smoking communication and parental smoking affect adolescents’ friendship selection processes. A total of 614 adolescents (aged 13-17 years) participated in a three-wave longitudinal study with a full-family design. Analyses were conducted by means of Structural Equation Modeling. Results demonstrated that high quality of parental anti-smoking communication was related to a lower likelihood of adolescent smoking, as well as smoking of the adolescents’ best friend. The frequency of communication was positively associated with adolescent smoking and best friend smoking. Parental own smoking predicted adolescent and best friend smoking, but also the extent to which parents were involved in anti-smoking socialization. In the group of adolescents with changing friendships, parental anti-smoking communication predicted selective affiliation with smoking friends. This strongly suggests that parents affect their adolescent child’s smoking behavior as well as friendship selection processes.

Dutch Cancer Society and the Dutch Organization of Scientific Research.

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POS1-136 HOME SMOKING POLICY AMONG KOREANS IN SEOUL


Background: Exposure to environmental tobacco smoke (ETS) places smokers and non-smokers at increased risk for lung cancer, heart disease and respiratory illnesses. Household restrictions on smoking are important for reducing ETS exposure and for promoting cessation. Despite having one of the highest smoking rates among men worldwide, very little is known about home smoking policies among Koreans in the Republic of Korea.

Objective: To examine the prevalence of home smoking policies in Seoul, and to identify factors associated with having home smoking bans.

Methods: In 2002, 485 adult Koreans living in Seoul were interviewed by telephone and provided information on their home smoking policy.

Results: Thirty-four percent of respondents smoked (62% of males and 7% of females). Almost all (97%) respondents either smoked themselves, or had a spouse or other family member or regular friend that smoked. Only 19% of homes were smoke-free; most (64%) allowed smoking anywhere, 15% allowed smoking in certain areas, and 1% made exceptions for special guests to smoke. The distribution of home smoking policy varied by respondent characteristics, including marital status, age, education, respondents’ and spouses’ smoking status, and media exposure to anti-ETS messages. The presence of children in the home was associated with restricting smoking in the home to special guests or to certain areas. Most respondents (78%) stated that they preferred to eat in smoke-free restaurants; these respondents were significantly more likely to have a full ban on smoking in the home than respondents who did not prefer smoke-free restaurants.

Discussion: The results suggest high risk for ETS exposure and related diseases in this population where smoking among men is the norm but only 19% of homes have smoke-free policies.

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POS1-137 INCORPORATING THE SMOKE-FREE-HOME PLEDGE IN A CLINIC PRACTICE

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Passive exposure to environmental tobacco smoke (ETS) contributes to a wide variety of deleterious health effects in children, including lower respiratory infections, wheezing, cough, and middle ear effusions. The purpose of the this project was to encourage families with smokers to institute a home smoking ban and to measure the efficacy of EPA’s Smoke-Free-Home Pledge in the clinic setting. The study population consisted of 232 participants recruited from one of five sites: a general pediatrics clinic, three WIC clinics, and a free immunization clinic. To be eligible for the study, participants needed to have at least one smoker and at least one child less than 18 years in the household. All participants signed a consent form and completed a baseline survey at the time of enrollment. The baseline survey indicated that despite having a smoker living in the home, 60% allowed no smoking inside the home, and 44% allowed no smoking inside the car. Each participant was randomly assigned to receive one of three interventions: no particular advice regarding smoking (standard care group), the EPA Smoke-Free Home brochure, or the EPA brochure plus counseling. A follow up survey regarding changes in smoking restrictions was completed on 141 of 232 (61%) participants approximately 6 months after the intervention. Despite repeated attempts by mail and telephone, the other participants could not be reached for follow up. A McNemar chi-square analysis showed no detectable effect of the EPA brochure on home smoking restrictions; however, 10 participants missing from unlimited whom which 3, 6, and 12 percent respectively between changing having smoking at home smoking at follow up. In addition, 22 participants commented that the smoker in the home quit or cut back smoking after the clinic visit. A McNemar chi-square analysis on changes in car smoking restrictions did indicate that the EPA materials had a statistically significant impact on self-reported reduction in smoking in the car (p=0.038). The results indicate that the pledge materials had a positive effect on reducing second hand smoke exposure, although the effect is small.

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POS1-138 SMOKE-FREE HOME POLICIES AND SMOKE CESATION IN ADULTS

A. Hyland, C. Higbee*, M.J. Travers, A. Van Deusen, M.B. Travers, K.M. Cummings, Roswell Park Cancer Institute, Buffalo, NY

Objective: To report on prevalence of smoke-free homes and examine the association between smoke-free homes and smoking cessation.

Methods: Data are reported on 2,602 smokers who originally participated in the Community Intervention Trial for Smoking Cessation between 1988 and 1993 and completed follow-up surveys in 2001 and 2005. Successful quitters are defined as reporting no cigarettes smoked in the 6 months prior to the 2005 interview. Respondents are defined as those who were successful quitters in 2001 who were currently smoking at the time of the 2005 interview. The percentage of smokers who reported they successfully quit or relapsed in 2005 were examined by different levels of home smoking rules.

Results: Among smokers in 2001, the percentage reporting that there is no smoking allowed in their home increased from 28% in 2001 to 37% in 2005. Smokers most likely to adopt smoke-free home policies between 2001 and 2005 were males and those with higher annual household incomes. After controlling for factors related to smoking cessation, 27% of smokers with smoke-free homes in 2001 reported that they had quit smoking by 2005, compared to 16% of those who allowed smoking in their homes (OR=1.8, 95% CI=1.4-2.3). Among current smokers in 2005, 62% with smoke-free homes reported that they had attempted to quit between 2001 and 2005, compared to 55% who allowed smoking in their homes (OR=1.5, 95% CI=1.2-1.9). Those with smoke-free homes were also less likely to relapse. Among successful quitters in 2001, 5% with smoke-free homes had relapsed to smoking by 2005, compared to 9% of those who allowed smoking in their homes (OR=0.5, 95% CI=0.4-0.7).

Conclusions: Smoke-free homes are becoming more prevalent and are prospectively associated with higher cessation indicators and lower relapse rates.

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POS1-139 HOME SMOKING RESTRICTIONS AND SMOKING CESSATION IN A LONGITUDINAL EPIDEMIOLOGIC SURVEY SAMPLE

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The current study investigated the impact of home smoking restrictions on smoking cessation in a sample of 452 adult smokers participating in a longitudinal epidemiologic study, the Wisconsin Behavioral Health Survey (WBHS). The WBHS sample was derived from a larger population-based phone survey in the 2003 Wisconsin Tobacco Survey (WTS), that interviewed 8,111 adult Wisconsin residents regarding tobacco use and cessation, general health, demographics and other tobacco control variables. The WTS identified 1544 current smokers of whom 1035 agreed to be recontacted for the WBHS. A total of 452 current smokers from the WTS enrolled in the WBHS and completed an in-depth phone interview one year after the WTS interview. WTS home smoking restriction measures were based on a BRFFS question that asked respondents to characterize rules about smoking in their homes: smoking is not allowed anywhere in the home (n=132; 29.2%), smoking is allowed in some places/times (n=137; 30.3%), smoking is allowed anywhere (n=27; 6.0%), or no rules about smoking (n=156; 34.5%); for purposes of analysis, the latter three categories were combined (n=320). WBHS primary outcome measures included whether or not a quit attempt was made in the year since the WTS interview and smoking status (abstinent or smoking) at one year. Respondents with complete home smoking bans were more likely (Chi-square=6.5, df=1, p<0.02) to have made a quit attempt (50.8%) as compared to respondents who allowed smoking or had no rules about smoking (37.8%). Also, respondents with complete bans were more likely (Chi-square=22.3, df=1, p<0.01) to become abstinent (23.5% vs. 7.5%). Despite these differences, both groups were similar in stated desire to completely quit smoking (76.0% vs. 77.3%) at the time of the WTS. However, respondents with complete bans were younger (41 vs. 48 years), smoked fewer cigarettes (11.5 vs. 17.7 cpd), and had lower FTND scores (2.2 vs. 3.6) at the WTS interview. Further studies are needed to determine if a change from less to more restrictive home smoking rules promotes quit attempts and cessation.

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POS1-140 PILOT STUDY OF SECONDHAND SMOKE EXPOSURE IN HOMES

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Background/Objective: With the increasing normative trend of clean indoor air laws prohibiting smoking in public places such as worksites, bars and restaurants, the home has emerged as the primary source of secondhand smoke exposure for many people. This pilot study gathered real-time data on levels of secondhand smoke pollution throughout ten homes where smoking is permitted and compared these levels to among three smoke-free homes.

Methods: We used TSI SidePak AMS10 Personal Aerosol monitors to assess levels of PM2.5, which is a marker for secondhand smoke, in two locations per home. In ten smoking homes, one monitor was placed in the primary smoking area, and the other monitor was placed in a distal location. Three smoke-free homes were also tested for comparison purposes. Participants kept logs of smoking and other activities that could affect air quality in the home so that the research staff could match the activities with the real-time air monitoring data to explain the levels of pollution.

Results: Our assessments encompassed 438 cigarettes and 715 hours among smoking homes and 220 hours among smoke-free homes. Little difference was observed in the average PM2.5 levels for the primary smoking and distal areas among smoking homes (84 micrograms per cubic meter and 67 micrograms per cubic meter, respectively, both in the ‘unhealthy’ range based on EPA outdoor air standards). In contrast, the average level among smoke-free homes was 9 micrograms per cubic meter. The 10th, 50th and 90th percentiles for smoking rooms were 4, 30 and 209 micrograms per cubic meter and those for distal areas among smoking homes were 5, 29 and 175 micrograms per cubic meter, compared to smoke-free homes which were 3, 6 and 7 micrograms per cubic meter.

Conclusions: The air in smoking homes was several times more polluted than the air in smoke-free homes, regardless of where the measurements were taken in the home. One way to protect household members from the unhealthy levels of air is to implement a smoke-free home policy.

This study was funded by the New York State Department of Health and the Flight Attendant Medical Research Institute.

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POS1-141  THE HAZARD OF TOBACCO SMOKE POLLUTION IN CARS: NEW EVIDENCE FROM AN AIR QUALITY MONITORING STUDY
Taryn Sendzik, B.A.*, Geoffrey T. Fong, Ph.D., University of Waterloo, Canada; Mark J. Travers, M.S., and Andrew Hyland, Ph.D., Roswell Park Cancer Institute, USA

Objectives: Tobacco Smoke Pollution (TSP) has been identified as a serious public health threat. Accordingly, laws have been developed to reduce TSP exposure. However, there have been few, if any, successful attempts to pass laws in cars where the small cabin space may contribute to concentrated exposure. The present investigation attempted to quantify the levels of TSP exposure in cars measuring fine particles less than 2.5 microns in diameter (PM2.5), one marker of TSP, which is easily inhaled deep into the lungs. Building upon the results from a pilot study, 5 real-world conditions varying the influence of air flow and car movement were monitored to provide the evidence base for possible laws to reduce TSP exposure in cars.

Methods: Ten smokers and their cars completed 5 controlled in vivo air-sampling conditions. Each condition varied on whether the car was moving, presence of air conditioning, open windows, and combinations of these air flow influences. Air quality readings were collected using a TSI Dustrak. PM2.5 was collected in the car while smoking each of the 5 conditions. Each condition varied on whether the car was moving, presence of air conditioning, and open windows. For at least 15 minutes after the smoking reading was collected, PM2.5 was collected in the car while smoking each of the 5 conditions.

Results: High PM2.5 peak levels, >5900 µg/m³, were observed under the condition with the least airflow. In the greatest airflow condition PM2.5 peaks exceeded 200 µg/m³. The findings from this study further support previous pilot testing results demonstrating that TSP in cars can reach unhealthy levels, even under the best realistic conditions. These results highlight the strong need for education programs to communicate the risk, and raise the level of awareness TSP exposure in cities. There is a need for policies extending protection against Tobacco Smoke Pollution to the domain of cars to protect individuals, especially children from harm.

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POS1-142  SECOND HAND SMOKE EXPOSURE IN A PEDIATRIC EMERGENCY ROOM POPULATION
LM Siqueira, M.D, M.S.P.H.*, and J. Tahmoressi, M.B.A., R.N., C. Miami Children’s Hospital, Miami, Florida

Purpose: Second hand smoke exposure to a serious health hazard and youth are an especially vulnerable population. In this pilot study we sought to determine exposure levels to tobacco smoke among youth in a pediatric emergency room, to determine the need to develop an intervention program for parents, on site.

Methods: Discarded, fresh (within four hours of voiding) urine specimens available in the hospital laboratory from patients seen in the emergency room were tested with NicAlert dipsticks for cotinine. The test strip is 98.8% sensitive and 97.5% specific for urine cotinine. The age and gender of the patients tested were noted from the urine specimen label.

Results:
- Of the 175 subjects, 51% (n=89) were male and the ages ranged from 1 month to 19 years, median 6 years (SD = 5.97). Minimal to no exposure to nicotine (0-10ng/ml) was found among 41.7% of subjects; 48% had cotinine levels of 10-30ng/ml indicating low exposure and 10.3% had levels of 30-100ng/ml indicating higher passive exposure to tobacco smoke. No subjects had levels above 100ng/ml (smokers). There was no significant difference in cotinine levels by age or gender.

Conclusion: Approximately sixty percent of pediatric patients seen in an emergency room had detectable levels of cotinine in their urines indicating passive exposure to tobacco smoke. Adolescents with low levels of cotinine may have been experimented. Pediatric emergency rooms may be a setting in which smoking prevention and intervention services can be offered to parents, thus utilizing the long wait time effectively.

Miami Children’s Hospital Foundation provided $2000/- to purchase the NicAlert dipsticks.

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POS1-143  REPORTED POLICIES AND PROTOCOLS ADDRESSING RESIDENT SMOKING IN NURSING HOMES
Celia A. Watt, Ph.D.*, Jill W. Lassiter, M.S.Ed., Jennifer R. Boyle, Ph.D., State University of New York—Brockport; Deborah Ossip-Klein, Ph.D., University of Rochester

Skilled nursing facilities have the dual purpose of maintaining or improving the health of those they serve and of providing a residence. Although healthcare facilities generally maintain smoke-free environments, nursing homes are often an exception due to their efforts to create settings that respect individuals’ rights to self-determination in their permanent residence. The close living proximity of residents, potential exposure to environmental tobacco smoke (ETS), the restricted mobility of many residents, needs for assisted smoking, and other safety concerns (e.g., residents dependent on oxygen) present risks for smoking and non-smoking residents and staff alike. This survey research of administrators and staff from N = 52 facilities across the United States describes variables in the nursing home environment relevant to resident smoking policies. Descriptive analyses illuminate current administrative issues, how staff and residents are notified about facility smoking policies, selection criteria for residents who get to smoke, smoking scheduling/supervision, safety issues, cessation assistance/encouragement, etc. in facilities that allow smoking (n = 47) and those that do not (n = 5). Findings from this research and recommendations for model smoking policies provide a first step for informing administrators and policymakers about how facilities can be safer and protect residents and staff.

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POS1-144  DOES AIR QUALITY WORSEN IN PSYCHIATRIC WARDS WITH THE CLOSURE OF DESIGNATED SMOKING ROOMS (DSR)?
Peter Selby, M.B.B.S., Centre for Addiction and Mental Health and Ontario Tobacco Research Unit, University of Toronto; Susan Bondy, Ph.D., Ontario Tobacco Research Unit, University of Toronto; Kristen Cleary, Nicotine Dependence Clinic, Centre for Addiction and Mental Health; Arshad Mahmood, Centre for Addiction and Mental Health

Background: The Centre for Addiction and Mental Health a 500 bed academic psychiatric hospital closed its 20 DSRs in September 2005 as part of a comprehensive smoke free policy. Although we hypothesized that after the ban the air quality would be significantly improved on the ward, there was a possibility that air quality could worsen because patients would be noncompliant thereby exposing staff to more smoke.

Methods: We conducted air quality studies in two DSRs, one at each CAMH inpatient facility. Portable continuous air sampling units were used while simultaneous testing inside and outside DSRR while in use and then again after the smoke free ban. The units measured Particulate Matter 2.5 (PM) and Polycyclic Aromatic Hydrocarbons (PAH). Measurements were taken at similar times each day to ensure comparable distribution of monitoring. Each reading lasted for 120 minutes and there were four sessions in total (one pre-implementation of smoke free ban and three readings each consecutive day after ban).

Results: The independent sample t-test was employed to test the difference in air quality between the pre ban and post ban period both inside and outside the DSR on the ward. Mean levels in the two groups were: inside the DSR at site 1 PAH (95% CI 266.6 - 321.3, p<0.00); inside dc (95% CI 778.9 -972.4, p<0.00); Outside DSR site 1 PAH (95% CI 5.9 - 6.9, p<0.001); and Outside DSR dc (95% CI 18.0 - 20.0, p<0.032). Mean level at site 2 was: inside the DSR (95% CI 85.0 - 109.4, p<0.00); inside dc (95% CI 360.5 - 443.9, p<0.00); Outside DSR site 2 PAH (95% CI 4.1 - 5.1, p<0.00); and Outside DSR dc (95% CI 4.0 - 5.0, p<0.00). There is significant improvement in air quality both inside and outside the DSR with closure of such room. The air quality on the ward did not deteriorate as a result of closing the DSR. Psychiatric wards can close their DSRRs but must ensure that adequate support and policies are enacted to enhance compliance with smoke free policies.

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POS1-145 SMOKE-FREE POLICIES IN ADDICTION AND MENTAL HEALTH TREATMENT FACILITIES IN ONTARIO, CANADA
Joan M. Brewster, Ph.D.*, Homa Kameh, M.Sc., Roberta Ferrence Ph.D., Robert Schwartz Ph.D., Peter Selby M.D., Ontario Tobacco Research Unit & Department of Public Health Sciences, University of Toronto.

Background & Rationale: Those with alcohol and other drug or mental health problems have much higher rates of smoking than the general public, and addiction to tobacco and tobacco related illnesses are a major cause of death in these populations. However, treatment often ignores smoking. The Smoke Free Ontario Act, implemented in June 2006, requires indoor public places and workplaces, including treatment facilities, to be smoke-free. At that time, we surveyed mental health and addiction treatment facilities in Ontario, Canada regarding their smoking policies. Methods: We emailed a 33-item questionnaire to key informants in 102 addiction treatment facilities and 57 mental health treatment facilities, all of which provide inpatient treatment. Non-respondents received one reminder. Responses: A total of 107 completed responses were received, a corrected response rate of 68%; 33 facilities provide mental health service only; 61 provide addiction services only; 13 provide both mental health and addiction services.

Policies: A majority of facilities do not allow smoking indoors (81%); addiction facilities were more likely than mental health facilities to report that smoking is not allowed (89% vs. 67%). Most facilities also restrict smoking on their grounds (94%). Mental health treatment facilities are more likely than addiction facilities to escort patients out-side to smoke (55% vs. 38%). About one quarter (26%) of facilities offer in-house smoking cessation programs for patients (36% mental health vs. 15% addiction). Mental health facilities are more likely than addiction facilities to supply NRT to patients (80% vs. 7%). Mental health facilities were also more likely than addiction facilities to report resistance to smoke-free policies among inpatients (69% vs. 43%) and staff (60% vs. 29%).

Conclusions: A majority of Ontario addiction and mental health treatment facilities are smoke-free indoors, and more have plans to make changes in accordance with the Act. Resistance to smoke-free policies is still considerable, particularly in mental health treatment facilities where staff resistance approaches that of patients.

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POS1-146 SECONDHAND SMOKE CONTAMINATION AND ASKING PRICE OF USED CARS
Georg E. Matt, Ph.D.*, Penelope J. Quintana, Ph.D., Ania Uribe, Dale Chatfield, Ph.D., San Diego State University; Romina A. Romero*, M.P.H., San Diego State University; University of California, San Diego

Smoking tobacco indoors contaminates environments with residual secondhand smoke (RSHS) and may expose nonsmokers to RSHS long after cigarettes have been smoked (Matt et al., 2004; Singer et al., 2002). Cars are particularly important reservoirs for RSHS. This study examined the RSHS contaminations and asking price of used cars sold on average for 10% less than comparable nonsmoker cars (p<0.001). Analysis of air, wipe, and dust samples showed significantly higher nicotine levels in cars that had been smoked (p<0.001). The cars’ smoking status accounted for 83% of the asking price variation (p<0.001). Controlling for KBB value and make, cars in which cigarettes were smoked in sold on average for 10% less than comparable nonsmoker cars (p<0.001). These findings suggest that about one in six used cars may be contaminated with RSHS. Used cars in which cigarettes have been smoked are offered at reduced prices. Tobacco control efforts aimed at protecting nonsmokers should consider RSHS in used cars as a potentially important exposure source. Nonsmokers may benefit from policies requiring disclosure of smoking status of former owners or certification of tobacco-free cars.

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POS1-147 TRENDS AND PREDICTORS OF PUBLIC SUPPORT FOR BANNING PARENTAL SMOKING INSIDE VEHICLES CARRYING CHILDREN IN ONTARIO, CANADA: 1996 TO 2005
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Secondhand smoke is implicated in sudden infant death syndrome, childhood cancer, and pediatric respiratory disease. Infants and children, with their high respiration rates, are especially susceptible. Levels of second hand smoke inside vehicles can exceed those in smoke bars, surpassing the hazardous level set by the U.S. EPA. Yet, few studies have examined public attitudes to parental smoking inside vehicles carrying children. Cross-sectional data from the CAMH Monitor (an ongoing, monthly, RDD telephone survey of Ontario residents aged 18 years and older) were compiled between 1996 and 2005, using a region-stratified two-stage (household, respondent) probability sample design (mean response rate=83%). Adjusting for complex survey design, levels of public support for a parental smoking ban in vehicles carrying children were assessed in 1996-1999 and 2002-2005 (unweighted n=9,862). Predictors of support were identified using logistic regression to examine socio-demographic factors, daily second hand smoke exposure at home, smoking behavior, nicotine dependence, and past-year quit attempts. Public support for a ban increased from 55% (95% CI: 51.7%-57.5%) in 1996 to 78% (95% CI: 74.7%-81.3%) in 2005 (p<0.05). Support also increased significantly (p<0.05) for both smokers and non-smokers over the same period: from 39% (95% CI: 33.5%-44.8%) to 66% (95% CI: 60.6%-72.3%); from 60% (95% CI: 56.6%-63.2%) to 81% (95% CI: 74.9%-87.5%); and for non-smokers. Compared to current smokers and former smokers were almost three times as likely as former smokers and the rest from centres that provided both types of services. Small facilities with less than 20 beds and large facilities were equally represented. Background: The Smoke-Free Ontario Act, effective May 31, 2006, prohibits smoking in all enclosed public places and workplaces in Ontario, Canada. Residential care and psychiatric facilities are allowed to operate “controlled smoking areas” under strict maintenance requirements. This study reports on challenges faced by Ontario mental health and addiction treatment facilities in implementing smoke-free policies in response to the new Act. Methods: Key informants were identified in 159 inpatient treatment services; 107 of them responded to an on-line survey regarding their smoking policies and practices (corrected response rate: 68%). Results: Half of responses came from addiction services, one-third from mental health services and the rest from centres that provided both types of services. Small facilities with less than 20 beds and large facilities were equally represented. Smoking was banned indoors in 81% of facilities and restricted outdoors to some extent in 94% of facilities. About half of facilities reported resistance among their patients and 41% among their staff when changing smoking policies. Reasons for patients objections were: perceived difficulty in simultaneously quitting and addressing their primary issue; inconvenience of going outside to smoke; the view that smoking is a right. Staff objections included: difficulty in dealing with patients’ restlessness when not allowed to smoke; additional staff time needed to address cessation issues; the belief that patients do better when one issue is addressed at a time. Respondents encountered a number of obstacles in implementing smoke-free policies such as feasibility issues, shortage of resources, ethical arguments, enforcement difficulties, workload and patient health/safety concerns. Conclusion: Implementation of smoke-free policies in mental health and addiction facilities is attainable but complex. Issues that need to be dealt with range from attitudes to practical.

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POS1-148 BARRIERS TO IMPLEMENTATION OF SMOKE-FREE POLICIES IN ONTARIO HEALTH and ADDICTION FACILITIES
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Background: The Smoke-Free Ontario Act, effective May 31, 2006, prohibits smoking in all enclosed public places and workplaces in Ontario, Canada. Residential care and psychiatric facilities are allowed to operate “controlled smoking areas” under strict maintenance requirements. This study reports on challenges faced by Ontario mental health and addiction treatment facilities in implementing smoke-free policies in response to the new Act.

Methods: Key informants were identified in 159 inpatient treatment services; 107 of them responded to an on-line survey regarding their smoking policies and practices (corrected response rate: 68%).

Results: Half of responses came from addiction services, one-third from mental health services and the rest from centres that provided both types of services. Small facilities with less than 20 beds and large facilities were equally represented. Smoking was banned indoors in 81% of facilities and restricted outdoors to some extent in 94% of facilities. About half of facilities reported resistance among their patients and 41% among their staff when changing smoking policies. Reasons for patients objections were: perceived difficulty in simultaneously quitting and addressing their primary issue; inconvenience of going outside to smoke; the view that smoking is a right. Staff objections included: difficulty in dealing with patients’ restlessness when not allowed to smoke; additional staff time needed to address cessation issues; the belief that patients do better when one issue is addressed at a time. Respondents encountered a number of obstacles in implementing smoke-free policies such as feasibility issues, shortage of resources, ethical arguments, enforcement difficulties, workload and patient health/safety concerns. Conclusion: Implementation of smoke-free policies in mental health and addiction facilities is attainable but complex. Issues that need to be dealt with range from attitudes to practical.

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IMPACT OF TOBACCO ADVERTISING POLICY ON SMOKERS’ AWARENESS OF TOBACCO PROMOTION IN SIX COUNTRIES: FINDINGS FROM THE INTERNATIONAL TOBACCO CONTROL POLICY EVALUATION PROJECT

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Thailand has one of the strongest tobacco advertising restrictions in the world, including a ban on point of sale advertising. Comprehensive tobacco advertising restrictions long existed in Australia, followed by Canada and more recently in the UK but are still limited at point of sale in these countries. Less comprehensive restrictions are present in Malaysia and the least in the US. This study aimed to examine the impact of tobacco advertising policy on smokers’ awareness of tobacco promotion in six countries. Baseline data (early 2005) from the ITC Southeast Asia Survey (ITC-SEA) conducted face-to-face in Malaysia and Thailand (n=4005) and Wave 3 data (late 2004) of the ITC Four Country Survey (ITC-4) conducted by telephone (n=8369) in Canada, US, UK and Australia were employed for the analyses. The results revealed that general awareness of any tobacco promotion was lowest in Thailand (20%), with prompted recall (combination of 5 situations) being even lower (13%), and higher in Malaysia (55%, prompted=80%), and almost three times higher in the four high-income countries (average=59%, prompted=71%). As expected, the US, with few restrictions, had the highest awareness levels (71%, prompted=92%) of all countries. Looking at specific locations, there was generally lower recall of tobacco advertising where it was banned, being very low in Thailand except at point of sale. In Malaysia, because of loopholes in legislation, tobacco advertising is still relatively prevalent in many locations (e.g., billboards) where they are notionally banned. In the four high-income countries, levels of awareness of tobacco advertising in areas where they are notionally banned were still markedly higher than in Thailand. This may be due to more opportunities for incidental and accidental display of tobacco related materials in those four countries and also possibly leakage from neighboring countries in some. These findings demonstrate that comprehensive tobacco advertising legislation can lead to dramatic declines in awareness of tobacco promotion, thus supporting strong implementation of Article 13 of the Framework Convention on Tobacco Control.

National Cancer Institute of the United States (R01 CA100382 and P50 CA111236 (Roswell Park Transdisciplinary Tobacco Use Research Center), Canadian Institutes of Health Research (57897 and 79551), Robert Wood Johnson Foundation (045734), National Health and Medical Research Council of Australia (265903), Cancer Research UK (C312/A3726), Canadian Tobacco Control Research Initiative (014578), Centre for Behavioural Research and Program Evaluation, National Cancer Institute of Canada/Cancer Society, Malayisian Ministry of Health.

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CHANGES IN PERCEIVED RISK OVER TIME AS A PREDICTOR OF QUIT INTENTIONS: FINDINGS FROM THE ITC FOUR COUNTRY SURVEY

Mary-Jean Costello*, Geoffrey T. Fong, Mark P. Zanna, Paul W. McDonald, University of Waterloo

Background: Recent evidence suggests that perceived risk is an important predictor of quit intentions; however, little is known about how risk perceptions vary over time or whether changes in perceived risk predict quit intentions.

Methods: We analyzed data from the ITC Four Country Survey, a cohort telephone survey of smokers in four countries: Australia, Canada, U.K., and U.S. Measures of perceived risk were collected at two times (N=4,307) and compared to identify whether perceptions changed overtime (i.e., increased, decreased, or remained stable). Changes in perceived risk were used to predict quitting intentions.

Results: Perceptions of heart disease risk changed significantly from Time 1 to Time 2. Specifically, 25.0% of smokers perceived greater risk at Time 2 than at Time 1 (i.e., perceptions of risk increased), whereas 28.7% perceived lesser risk at Time 2 than at Time 1 (i.e., perceptions of risk decreased). Forty-six percent maintained consistent perceptions over time. Those who increased perceived risk were more likely to intend to quit smoking at Time 2 than those who maintained stable risk perceptions (OR=1.44, CI: 1.14-1.82, p=0.002), whereas those who decreased perceived risk were less likely to intend to quit smoking at Time 2 than those who maintained stable risk perceptions (OR=.66, CI:.53-81, p<0.001). Further, the proportion of smokers who increased their perceptions of risk did not differ significantly by county. However, significantly more Canadian and British smokers decreased their risk perceptions from Time 1 to Time 2 (32.3% and 30.7%) compared to American and Australian smokers (23.2% and 26.7%), whereas significantly more American and Australian smokers maintained consistent risk perceptions (51.8% and 47.9%) compared to Canadian and British smokers (43.2% and 44.1%).

Conclusions: Public health campaigns and stop-smoking intervention should consider strategies that increase perceptions of risk among smokers and, perhaps most importantly, strategies that help maintain high perceptions of risk overtime.

National Cancer Institute of the United States (R01 CA100382 and P50 CA111236 (Roswell Park Transdisciplinary Tobacco Use Research Center), Canadian Institutes of Health Research (57897 and 79551), Robert Wood Johnson Foundation (045734), National Health and Medical Research Council of Australia (265903), Cancer Research UK (C312/A3726), Canadian Tobacco Control Research Initiative (014578), Centre for Behavioural Research and Program Evaluation, National Cancer Institute of Canada/Cancer Society.

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POS1-151  
**DIFFERENCES IN RATIONALIZATION AND REGRET AMONG SMOKERS IN WESTERN COUNTRIES AND ASIA COUNTRIES: FINDINGS FROM THE INTERNATIONAL TOBACCO CONTROL POLICY EVALUATION PROJECT**

Wonkyong Beth Lee*, Geoffrey T. Fong, Mark P. Zanna, David Hammond, University of Waterloo, Canada; Ron Borland, The Cancer Council Victoria, Australia; Buppha Sirirassamee, Mahidol University, Thailand; Maizurah Omar, Universiti Sains Malaysia, Malaysia; HongGwan Seo, National Cancer Center, Korea.

Rationalization and regret are two common psychological experiences among smokers. They have been found to be negatively related to each other, and both related to intentions to quit. The goal of this paper was to compare the prevalence of rationalization and regret among adult smokers in 7 countries of the International Tobacco Control Policy Evaluation Project (the ITC Project: in four high-income “Western” countries (Canada, US, UK, and Australia) and in three Asian countries (Thailand, Malaysia, South Korea). We analyzed data from the baseline wave of the ITC Four Country Survey in Canada (N=2,193), US (N=2,115), UK (N=2,344), and Australia (N=2,271), the ITC Southeast Asia Survey in Malaysia (N=2,006) and Thailand (N=2,000), and the ITC Korea Survey (N=1000). The respondents were adult smokers (>=18 years) in each country. Prevalence of rationalization (i.e., “Everyone has got to die of something, so why not enjoy yourself and smoke”) and of regret (i.e., “If you had to do it over again, you would not have started smoking”) varied across countries. Rationalization was extremely low in Thailand (9%), compared to Korea (31%), US (33%), and Canada (34%), which in turn was lower than rationalization in Australia (42%). UK (46%). Malaysia showed the highest level of rationalization (49%). For prevalence of regret, the ordering of the countries was opposite, with Thailand having the highest levels of regret (92%), Malaysia, the lowest (79%), and the other countries falling in the middle (Korea at 87%; the other countries at the 90% level). The differences in rationalization and regret prevalence among these countries may reflect differences in history and intensity of tobacco control measures, whose resulting norms may affect the level of dissonance experienced by smokers as they continue to smoke. These results point to the potential importance of rationalization and regret as indicators of societal norms regarding smoking.

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POS1-152  
**REBELLIOUSNESS PREDICTS SMOKING STATUS AND SMOKING SUSCEPTIBILITY AMONG YOUTH IN THAILAND AND MALAYSIA: FINDINGS FROM THE ITC SOUTHEAST ASIA SURVEY**

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Past research has demonstrated that rebellious adolescents are more likely to engage in risky behaviours including smoking. However, the majority of the research has focused on youth in Western populations. This study examined the association between rebelliousness and smoking and susceptibility to future smoking among adolescents in Thailand and Malaysia. We analyzed data from the baseline wave (Jan-March 2005) of the youth sample of the ITC Southeast Asia Survey, a cohort survey of a nationally representative sample of 13-17 year old adolescents (N=1970 across the two countries). Weighted logistic regression analyses were used to predict smoking status (where 0=non-smoker and 1=current or experimental smoker). Rebelliousness was measured using 3 items (which were highly correlated); “sometimes I ignore rules that get in the way of what I want to do.” “I do things my parents would not want me to do,” and “do you ever get in trouble with authorities at school, work or other places?” Items were combined to form an index of rebelliousness using the average score of the 3 items. Controlling for country, age, gender, and number of friends that smoke, rebellious adolescents were significantly more likely to be smokers (p=0.001). Adolescents susceptible to future smoking were identified via a subset of Pierce et al. (2006) susceptibility measure. Those who were not susceptible to future smoking Those who responded “definitely not” to the question, “if one of your best friends were to offer you a cigarette, would you smoke it?” and “at any time during the next year do you think you will smoke a cigarette?” were classified as not susceptible; those who responded “probably not,” “probably yes,” or “definitely yes” to both questions were classified as susceptible. Weighted logistic regression analyses were used to predict smoking susceptibility among adolescent non-smokers. Rebelliousness was significantly associated with susceptibility to future smoking (p<0.001). This is the first nationally representative survey of adolescents in Thailand and Malaysia that has examined the importance of rebelliousness in predicting current smoking and future smoking among non-smokers.

Funding: National Cancer Institute of the United States (R01 CA100362 and P50 CA111236 Roswell Park Transdisciplinary Tobacco Use Research Center), Canadian Institutes of Health Research (57897 and 79551), Robert Wood Johnson Foundation (045734), National Health Medical Research Council of Australia (265903), Cancer Research UK (C312/A3726), Canadian Tobacco Research Initiative (014578), Centre for Behavioural Research and Program Evaluation, National Cancer Institute of Canada/Cancer Research UK, Malaysian Ministry of Health, Canadian Institutes of Health Research, CIHR Strategic Training Program in Tobacco Research.

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POS1-153 NOVEL METHODOLOGICAL FEATURES OF THE NEW ZEALAND ARM OF THE ITC PROJECT

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The International Tobacco Control (ITC) Survey aims to evaluate the effects of national tobacco control policies on smokers around the world by recruiting cohorts of smokers who are surveyed annually. The impact of policy interventions on psychosocial variables and behaviours of smokers longitudinally is assessed through quasi-experimental studies with ITC countries without the policy change acting as controls. An arm of the study is being set up in New Zealand (NZ), a country with a strong tobacco control tradition. For example, NZ banned advertising and promotion of tobacco in 1990, and in December 2004 it was the 3rd country after Norway and Ireland to implement national comprehensive smokefree workplace legislation. However, adult smoking prevalence is still 23%, and is almost twice as high among Maori (indigenous NZers). The NZ arm of the ITC study has two distinctive features. First, rather than starting a cohort de novo, smokers will be recruited from the New Zealand Health Survey (NZHS), a national survey involving face-to-face interviews with a high response rate. This will reduce the costs and difficulties of identifying, recruiting and maintaining a nationally representative cohort of smokers. Another advantage of this approach is that NZ data will be linked with NZHS data, enabling exploration of broader influences on smoking and quitting behaviour over time. The NZHS collects data on health status (e.g. SF 36, Kessler-10 anxiety and depression instrument), socio-economic position, perceived racism, health care utilisation, and other health-related behaviours. We will present examples of possible analyses. Second, almost half of the NZ ITC cohort will be Maori smokers (facilitated by over-sampling of M?ori in the NZHS) giving adequate power to undertake sub-group analyses. Other ITC countries include only small numbers of indigenous or ethnic minority participants. We will present additional questions to be used to explore issues of particular interest to M?ori and the impact of policies on M?ori smokers. These data could inform tobacco control strategies for M?ori, and also for indigenous peoples in other countries.

Funding: Health Research Council, New Zealand.

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POS1-154 DEMOGRAPHICS AND PREVALENCE OF TOBACCO USE AMONG CAMBODIAN ADULTS: FINDINGS FROM THE 2005-2006 NATIONAL PREVALENCE SURVEY (TOBACCO CONTROL LEADERSHIP TRAINING PROGRAM)

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There is currently a paucity of national prevalence data on tobacco and health in most of the nations of Southeast Asia. In Cambodia, a few items on tobacco use have been added to economic surveys in 1999, but no nationwide survey of tobacco and health had been conducted until our 2005-2006 survey of 13,988 adults (ages 18 and older) that was designed by the Fogarty-NIH sponsored Tobacco Control Leadership Training Program (TCLT), administered by the National Institute of Statistics (Ministry of Planning, Phnom Penh Cambodia). Survey items were designed based on (1) focus groups, (2) graduate-level training in survey research of Ministry of Health personnel, (3) consultation with local NGO’s who had conducted provincial surveys on tobacco use, and (4) validation studies to compare survey measures of tobacco use to salivary cotinine. The final survey included items and pictograms tobacco use (commercial cigarettes, hand-rolled cigarettes, chewing tobacco, tobacco pipe), and also included items on knowledge and attitudes about tobacco, smoking cessation, anthropometrics, diet, current health, women’s health, and media exposure. The overall prevalence of tobacco use was 49% among men and 21% among women. Current use of cigarettes was 10-fold higher in men (48%) as compared to women (3.6%). Use of chewing tobacco was 17-fold higher in women (17%) than in men (1%). The prevalence of use of chewing tobacco in women dramatically increased with age (1% for 18-26 years; 6% for 26 to 36 years; 17% for 37 to 48 years; 44% for > 48 years). Our survey data indicates that about 1 out of 2 of the oldest Cambodian women chew tobacco, and our focus group data indicates that the practice is tied to long held cultural beliefs. Prevention programs need to target younger and middle-aged women who are adopting this form of culturally acceptable tobacco use in older age. Valid estimates of tobacco use in Cambodia indicate that about half of all adult men and older women use tobacco. Our data indicates that men primarily smoke cigarettes and that it is a cultural norm for women to begin chewing tobacco during older age.

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POS1-155 USING QUALITATIVE RESEARCH METHODS TO ASSESS CHANGE: TOBACCO CONTROL IN THE DOMINICAN REPUBLIC


The Dominican Republic is a tobacco growing country with significant tobacco use and exposure. Published research on DR tobacco use, attitudes/beliefs is limited as are tobacco control and intervention programs. Six economically disadvantaged DR communities (2 urban, 2 peri-urban, 2 rural) were randomized to community-based tobacco intervention vs. control conditions. To guide program development and evaluation, serial Rapid Assessment Procedures provided a baseline and post-implementational qualitative snapshot of community attitudes and perspectives on tobacco use. Interdisciplinary mixed gendered teams conducted observations and interviews over a 2-week period in 2003 and 2006 in the 6 communities. Over 150 individuals across communities representing key leaders and community members participated in each data collection period. Tobacco users, former users and non-users were included. Changes across all communities included greater awareness of risks of passive smoking, increasing view of tobacco use as a "vice" and more private smoking. Fewer social smokers were identified as most considered themselves non-smokers. New ways of using tobacco were discovered: using an orange leaf to self-roll tobacco (pirulí), and buying braided tobacco leaves pre-soaked in alcohol or coffee to use in pipes or self-rolled cigarettes (huevo). Chewing tobacco appears to be increasing among young adults. The three intervention communities had more individuals engaged in quitting, greater awareness of anti-tobacco messages, and a heightened sense of costs and health risks associated with tobacco use. Health care providers in intervention communities were more likely to refer smokers to local tobacco cessation specialists and community resources. Overall, attitudes and awareness regarding tobacco changed over time in both intervention and control communities, with greater change in former. The absence of a culture of quitting, noted in 2003, was obvious only in the control communities in 2006. Results of this qualitative research were used to guide ongoing.

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POS1-156 PAST ATTEMPTS AND FUTURE INTENTIONS: QUITTING AND REDUCING CIGARETTE USE IN A REPRESENTATIVE SAMPLE OF CANADIAN DAILY SMOKERS

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Introduction: Understanding the past attempts and future intentions of smokers regarding their cigarette use is important because this information can provide a framework, within which to plan tobacco cessation initiatives. Using a cross-sectional sample of adult current daily smokers, this project explored both past quit and reduction attempts as well as the future plans of smokers regarding changing the amount they smoked.

Methods: Random digit dialing telephone survey of Canadian current daily smokers, 18 years and older. Projected final sample size of 850 respondents (work in progress). As part of this survey, respondents were asked: (1) if they had ever smoked more cigarettes on a daily basis than they do now (including, how long ago, duration, and quantity); (2) past serious quit attempts; (3) past reduction attempts of at least five cigarettes per day; and (4) future plans about their smoking (maintain, increase, reduce, quit).

Results: Of the first 759 respondents, 49% reported that they used to smoke more than they do now (unweighted proportion; weighted proportions to be provided in full presentation). Quit and reduction attempts were very common with 85% having made a pricing attempt to quit and 72% stating that they had attempted to reduce the amount they smoked by five cigarettes or more. The majority of respondents had plans to change their cigarette use, with 55% planning to quit, 20% to reduce and 21% to maintain the amount they smoked (4% did not know and 1 respondent planned to increase). Detailed results will be presented of the planned attempts of these future intents as well as whether respondents who plan to reduce are doing so as a means to eventually quit.

Discussion: These results present a picture of smokers, the majority of whom appear to be in some form of transition. Opportunities exist to capitalize on these intentions to change in efforts to promote tobacco cessation.

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POS1-157 GIVING UP SMOKING AND SEX IN THE PROVINCIAL COUNCIL IN LLEIDA

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Introduction: The Company Medical Service in collaboration with the Spanish Association against Cancer in Lleida and the Safety and Health Committee, studied nicotinism and sex in order to provide adequate medical care to workers. A voluntary and 80% subsidized treatment was offered in the laboral schedule. There were group therapies and individual ones to support workers.

Objective: The objective is to study the characteristics of nicotine habit according to gender.

Material and Method: Data of age, sex, number of cigarettes smoked per day and number of attempts to give up smoking were written on an anonymous questionnaire. Results: 40% were men. (IC95% 33.2-47.1%). The majority of people were in the 35-44 year old group. 32% of the workers smoked. 66.3% were very worried about the possible effects of smoke on their health. 74.2% were very worried about the possible effects of smoke on non-smokers health. 71.2% had tried to give up smoking.

Conclusions: Prevalence of smokers was 32%. The highest prevalence of smokers was found in the 45-55 year old group. More than two thirds of the workers were very worried about the effects of smoke on them and on the people around them.

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Background: Development over time in initiation and cessation of daily smoking and daily use of snus (Swedish smokeless tobacco) cannot be fully described by time series of point estimates of prevalence, since these data do just show the end result of two consecutive processes, initiation and cessation. Method: Nationwide representative population surveys (n=26,084) has established data regarding Ever Daily Smoking (representing initiation) and Current Daily Smoking (the difference representing cessation). Corresponding data are also established for daily use of snus as well as data regarding time of birth and level of education. Comparisons are made between 5 ten-year birth cohorts, the 1930s through the 1970s.

Results: Initiation of daily smoking was most common among men born in the 1940s, 62% in the Low Education group (LE) and 52% in the High Education group (HE), corresponding current rates having come down to 21% (LE) and 12% (HE). In later born cohorts both initiation and current rates are successively lower. For those born in the 1970s rates of current daily smoking are 14% for (LE) and 6% (HE). Female patterns are similar, while the peak occurs some 10 years later than among men, post-peak levels being higher among women than men. Initiation of Primary Snus Use (no previous smoking) has been steadily increasing through cohorts in all categories, men and women. In men born in the 1970s the current rate of daily snus use is 34% (LE) and 22% (HE). Corresponding data for women are for 7% (LE) and 3% (HE). In all categories total tobacco use (smoking + snus use) has been decreasing through the post-peak cohorts.

Conclusions: Health risks of snus use are substantially lower than those of smoking, and the increase of snus use through birth cohorts in Sweden has been associated with decreasing total tobacco use. This suggests that the emergence of increased snus use has been beneficial from health point of view not only on individual but also on population level.

No funding.

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Society for Research on Nicotine and Tobacco

SRNT ◆ Poster Session 1
POS1-159 INTEGRAL INTERVENTION AGAINST NICOTINISM IN THE PROVINCIAL COUNCIL OF LLEIDA

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Introduction: The Provincial Council of Lleida has carried out prevencion and treatment policies against nicotinism in collaboration with the spanish Association against Cancer in Lleida and the Safety and Health Committee since 2003. Objective: The objective is to analyze the health policy against nicotinism.

Material and Method: 2003 May: Safety and Health Committee Meeting with the Company Health service, Staff Deputy, the Head of staff and the Labor Union. June to September: Questionnaire is given to workers. October: Results Analysis November to December: Preparation of the Group therapy Course 2004 January: 12 sessions in two groups. Deshabilitation course. Health Committee meeting to analyze results.

Results: 7 weekly interventions. February 2004 to February 2005: Treatment and Following: 2 interventions every 15 days, 1 monthly intervention, 1 intervention every three months and 1 intervention every 5 months. 2006 April: Health Committee Meeting to analyze results.

Conclusions: Intervention against tobacco in the Provincial Council has been very positive. More interventions should be offered in the field of work.

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POS1-160 WHY DID PATIENT WITHDRAW FROM SMOKING CESSATION TREATMENT?

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Taiwan has launched National Smoking Cessation Service (NSCS) since Sep 2002. The government reimbursed physician counseling and pharmacotherapy for dependent smokers. Primary care or hospital-based physicians, after completing a 6-hour training course, were allowed to prescribe 8-week NRT or bupropion in 4-8 outpatient counseling sessions. Between Sept. 2002 and May 2005, 125,538 smokers (males 86.1%) received smoking cessation treatment in NSCS. However, each patient only had 2.11 sessions of physician counseling and 2.44-week prescription of NRT or bupropion. The duration and strength of treatment was obviously lower than that of recommendation or expectation. Only 24.8% of motivated smokers had at least 3 sessions of physician counseling in NSCS. It meant most participants terminated their treatment very prematurely. This study aimed to investigate the possible factors which might influence patients' decision to continue or withdraw smoking cessation treatment based on a routine health care system. We analyzed from 3 different aspects: demographic characters (gender, age and education), smoking status (years of smoking, daily cigarette amount, previous quit attempts) and factors related to treatment (primary care or hospital-based clinics, public or private sectors, and content of treatment). Logistic regression analysis was performed for statistic process. The results showed that younger group and lower education level withdrew earlier. Gender was not significant. Participants with <=10 years of smoking had the highest rate to terminate treatment earlier. As the years of smoking increased, the treatment duration also increased. Amount of daily cigarettes and previous attempts did not contribute to the duration of treatment. Motivated smokers who received the service at a hospital-based clinic had longer treatment duration than those in primary care. No difference was identified between public or private sectors. Bupropion group had longer duration of treatment than NRT group. This preliminary analysis showed compliance to smoking cessation treatment based on a routine service was much lower than expectation. Further research is necessary.

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POS1-162 PREVALENCE OF NICOTINISM IN THE PROVINCIAL COUNCIL OF LLEIDA

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Introduction: Several prevalence studies and campaigns against nicotinism have been carried out with the involvement of the Company Medical Service, the Spanish Association Against Cancer in Lleida and the Safety and Health Committee. A free treatment was offered using a group cognitive-behavioral method and an individual supporting one. Objective: The objective is to analyze prevalence, workers' attitude and motivation during the campaigns.

Material and methods: Data about age, sex, smoker, number of cigarettes smoked per day and number of attempts to give up smoking were written on an anonymous questionnaire. N=200

Results: 40% were men (IC95%: 33.2—47.1) The majority of people were in the 35-44 year old group. 32% of the workers smoked. The prevalence of nicotinism was 40% in this group. 66.3% were very worried about the possible effects of smoke on their health. 74.2% were very worried about the possible effects of smoke on non-smokers people's health. 71.2% had tried to give up smoking. Conclusions: Prevalence of smokers was 32% The highest prevalence of smokers was found in the 45-55 year old group. More than two thirds of the workers were very worried about the effects of smoke on them and on the people around them.

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POS1-163 TOBACCO CONSUMPTION AS CAUSES OF HEALTH AND INCOME DEPRIVATION: ANALYSIS OF NATIONAL SURVEY DATA, INDONESIA 2004

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Background: World Health Organization estimates that in 2020 smoking related diseases will be the biggest health problem that causes 8.4 million deaths per year (Health Department 2004). Adult smoking prevalence 1995-2001 was increasing. For total smoking prevalence, it increased by 3% point (from 27 to be 31.5%) while for men it increased by 9% point (from 33.4 to 62.2%). However, for women this rate was decreasing by 0.4% point (from 1.7 to 1.3%). While the smoking prevalence for the poor in 2001 were 30% totally, 63% for men and 1.7% for women. This fact reveals that tobacco consumption effect negatively not only the health condition but also the welfare condition. Therefore, study to analyze the impact of tobacco consumption to health and income status is much needed. This study will reveal how tobacco consumption determines the status of health and income of the smokers.

Objective: 1) To determine the impact of tobacco consumption to household income status. 2) To determine the impact of tobacco control regulation to smoking behavior by income group.

Method: 1) Descriptive analysis using cross tabulation of the raw data will be used to determine the impact of tobacco consumption to income status. 2) Regression analysis will be used to reveal the impact of tobacco control regulation to the smoking behavior. This study will use Indonesian Socio Economic National Survey 2004 data.

Result: 1) Average monthly household expenditure for tobacco was higher than average monthly expenditure for education and health. The tobacco expenditure was 2.1 times higher than education expenditure and 1.7 times higher than health expenditure. It reveals that, actually, education and health expenditure for the poor are lower than the rich. 2) Increasing 10% price of cigarette will tend to decrease cigarette consumption by the poor 4.6%, while for the rich the impact was 4.2%.

Policy Implication: In order to decrease the smoking prevalence and to increase the Poor’s welfare, the government should increase cigarette price consistently.

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POS1-164 SOCIO-ECONOMIC VARIATIONS IN TOBACCO CONSUMPTION, INTENTION TO QUIT, AND SELF-EFFICACY TO QUIT AMONG MALE SMOKERS IN THAILAND AND MALAYSIA: RESULTS FROM THE ITC-SEA SURVEY

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Aim: To examine the association of socio-economic position with cigarette consumption, intention to quit and self-efficacy to quit in Thailand and Malaysia.

Methods: The data were based on a survey of adult smokers conducted in early 2005 in Thailand (n=1,846 men and 154 women) and Malaysia (n=1,906 men and 98 women) as part of the International Tobacco Control South-East Asian (ITC-SEA) project.

Results: The central finding was that higher income in Thailand was associated with higher cigarette consumption, having no intention to quit and low self-efficacy, and that being employed in Malaysia was associated with higher cigarette consumption. The data also revealed that in Malaysia, being non-Muslim was associated with higher cigarette consumption. In both countries not having a past quit attempt was associated with no intention to quit and low self-efficacy.

Conclusions: The result that higher socio-economic position is related to higher consumption was inconsistent with studies in high-income countries. This might be due to the fact that in low-income countries such as Malaysia and Thailand, a larger proportion of people in lower socio-economic strata experience absolute levels of deprivation and poverty. While it is possible for most disadvantaged smokers in the high-income countries to spend money on additional cigarettes, this might not be the case in Thailand and Malaysia. Other implications of the results will be discussed.

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POS1-165 NUMBER OF CIGARETTES AND GENDER IN THE REGIONAL COUNCIL

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Introduction: The Company Medical Service in collaboration with the Spanish Association against Cancer in Lleida and the Safety and Health Committee, studied tobacco consum by the Regional Council workers. A free and 80% subsidized treatment was offered to workers in work hours in a group therapy and an individual one to support cessation.

Objective: The objective is to analyze the number of cigarettes smoked by workers and analyze if there is differences according to sex, in order to provide adequate cognitive-behavioral treatment.

Material and Method: Data of age, gender and number of cigarettes smoked per day were written in an anonymous questionnaire by workers. N=200. Results: 60% were women. 37.3% smoked 1-10 cigarettes/day, 45.1% 11 to 20 cigarettes/day and 5.9% more than 30. 48.4% of men smoked 1-10 cigarettes/day vs 3.2% of women. 5% of men smoked 41-60 cigarettes/day vs 3.2% of women. 5% of men smoked more than 80 cigarettes/day vs none of the women.

Conclusions: Higher percentage of women was found in the less cigarette consum group and higher percentage of men in the highest cigarettes consum group. The largest group was the one that smoked 10 to 20 cigarettes/day.

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POS1-166 PROMOTING SMOKING CESSATION IN WOMEN: A STUDY ON KNOWLEDGE, ATTITUDE AND PRACTICE AMONG AFFILIATES OF WOMEN ORGANIZATIONS IN HONG KONG

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Objectives: To describe the knowledge, attitudes and practice regarding tobacco control among affiliates of women organizations in Hong Kong with a focus on women smoking.

Background: We set up a ‘Women Against Tobacco Taskforce’ (WATT) with 14 women organizations to promote smoking cessation among women smokers in the community. In order to build a community-based network to support gender specific smoking cessation counseling, we assessed the potential members’ role perception, knowledge, attitudes and practice towards tobacco control and smoking cessation.

Methods: All staff, volunteers, and members of eight women organizations participated in WATT were invited to complete a self-administered anonymous questionnaire.

Results: A total of 623 out of 771 (80.8%) affiliates of the women organizations completed and returned the questionnaire. About 88.5% were female, 96.7% aged < 60 years, 34.7% were living with smokers, and 23.6% had family member with smoking related diseases. About 2.9% (14/485) of females and 4.5% (3/67) of males were smokers. Their knowledge on smoking and health [mean ± SD] (3.91 ± 1.44; average correct answers out of 7 questions), smoking related diseases (2.91 ± 0.97; out of 6 questions), and women-specific diseases (2.93 ± 1.87; out of 6 questions), were inadequate. They had positive attitudes towards tobacco control (3.31 ± 0.55) and their role in helping smokers stop smoking (3.19 ± 0.56) while their attitudes towards women smoking was negative (1.95 ± 0.55) on a 4-point Likert scale (1= ‘Strongly disagree’ to 4= ‘Strongly agree’). About 39.3% had provided smoking cessation counseling to clients in the past 6 months although for less than once per week on average, and perceived self-efficacy in helping clients quit smoking was low (2.10 ± 0.53; on a scale of 1-4).

Conclusions: While the affiliates of women organizations are the first point of contact to woman smokers in the community, they have limited knowledge on smoking and health but positive attitudes. Appropriate training is required to build capacity and enhance self-efficacy in helping women smokers stop smoking.

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POS2-2 CIGARETTE SMOKERS DISCOUNT THE PAST MORE THAN CONTROLS

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Recent evidence from our laboratory demonstrated that humans discount rewards in the past similarly to how they discount the future (Yi et al., 2006). Specifically, discounting of the past has been shown to be orderly, hyperbolic, demonstrate the magnitude effect and correlated with future discounting. Here we report on a study to examine whether the greater discounting of future rewards evident among cigarette smokers relative to controls can be extended to the discounting of past monetary rewards. Twenty-nine smokers and nonsmokers participated in discounting procedures for future and past hypothetical money rewards ($10, $100, $1,000). Hyperbolic discounting rates were determined, and the prevailing magnitude effect was observed. Smokers were found to discount future and past rewards more than nonsmokers with age, gender, income, and education serving as covariates. Future and past discounting of rewards exhibited similar goodness-of-fit measures, were correlated with each other and were not statistically different from each other. This study suggests that addiction produces similar changes in the processes that underlie future and past rewards.

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POS2-3 EFFECTS OF NICOTINE AND INCENTIVES ON ATTENTIONAL MODIFICATION OF STARTLE IN NON-SMOKERS

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Nicotine is thought to enhance attention, though the literature raises the question of whether the enhancement is due to alleviation of withdrawal or a true enhancement. Nicotine has also been shown to increase the effects of incentives on behavior. The effects of nicotine and incentives on attentional processing was studied in a sample of non-smokers (n = 67). Automatic and controlled aspects of attention were assessed via attentional modification of short-lead prepulse inhibition (PPI) and long-lead prepulse facilitation (PPF) of the startle eyelink reflex during an auditory attention task. Participants attended to one of two pitches during an intermixed series of tones, making a button press following the offset of target tones. Acoustic startle probes were presented 60, 120, 240, and 4500 ms after onset of 2/3 of the tones and during the intertrial interval. Participants completed two lab sessions, once while wearing a 7-mg nicotine patch, and once while wearing a placebo patch. To examine incentive effects, half of the participants were offered a monetary reward for task performance and the other half were asked to “try their best.” Participants then completed a series of passive PPI trials using discrete presupules. Nicotine increased overall PPI during the tone series, suggesting nicotine improves relatively automatic attentional filtering. Nicotine, incentives, nor their interaction increased attentional modification of PPI or PPF. However, a regression analysis indicated that nicotine increased attentional modification of both PPI and PPF for participants with low levels of attentional modification during placebo. Nicotine did not increase PPI to passive presupules. However, participants exhibiting lower PPI during the placebo session showed the greatest increase in PPI with nicotine. These nicotine effects on attention were seen in non-smokers, suggesting that nicotine’s effect is more than an amelioration of withdrawal. The significance of the results are discussed in relation to the role of nicotine in increasing automatic and controlled attentional processing, individual differences in attentional processing, and direction for future research.

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It is almost heresy to question the dopamine (DA) hypothesis of brain reward involving nucleus accumbens (Nac) because of a great deal of supportive animal data. Nicotine has been shown by many basic scientists to release DA in rodent Nac (e.g., see Di Chiara and Imperato, 1988; Zocchi et al., 2003). Acute nicotine releases DA mostly in the Nac shell, and in pretreated animals in the core (Benwell and Ballou, 1992; Cadoni and Di Chiara, 2000). Nisell et al (1997) found preferential DA release in Nac shell after acute and chronic administration. In contrast, human studies using [11C]raclopride to indirectly measure core DA release are very limited. Data from our research using PET methods for monkeys and humans indicate that nicotine/tobacco smoking produces a relatively small release of brain DA. Furthermore, the precise location of DA release measured indirectly with displacement of [11C]raclopride in overnight abstinence smokers who smoke average nicotine cigarettes is not in nucleus accumbens but in the ventral pallidum. The limited data to support this conclusion are the subject of this report.

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POS2-5 [I-123]OMAZENIL SPECT IMAGING OF GABA-A-BENZODIAZEPINE RECEPTOR IN SMOKERS AND NONSMOKERS

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Many smokers experience subsyndromal anxiety symptoms while smoking and during acute abstinence, which appear to resolve with extended abstinence. The GABA-A-benzodiazepine receptor (GABA-A-BZR) is the initial site of action of anti-anxiety drugs in brain. Chronic nicotine treatment in rodents induces an up-regulation in GABA-A-BZRs. We have hypothesized cortical GABA-A-BZR is higher in smokers compared to nonsmokers and that GABA-A-BZR availability correlates with the degree of subsyndromal anxiety. We imaged cortical GABA-A-BZR using [I-123]omazenil and single photon emission computed tomography (SPECT). To date, twelve healthy smokers (6 men; 6 women) and fourteen nonsmokers (8 men; 6 women) age-range 19-58y have been imaged. [I-123]omazenil (6mCi) was injected intravenously using a bolus to constant infusion ratio of 7.5 and three 12 min scans were accomplished. Following S2, another fixation cross appeared, signifying the beginning of a different S1-S2 trial using a new picture. 

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POS2-6 BRAIN ACTIVITY DURING ANTICIPATION OF SMOKING-RELATED AND EMOTIONALLY POSITIVE PICTURES IN SMOKERS AND NON-SMOKERS

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Previous studies have shown that a brain wave form known as Stimulus Preceding Negativity (SPN) is an index of the anticipation of motivationally relevant events. For example, in heterosexuals, larger SPNs occur when anticipating an attractive nude of the opposite sex than when anticipating a nude of the same sex. The present study used SPN as an index of the motivational significance of smoking-related pictures to smoking and nonsmoking smokers. Emotionally positive and neutral pictures served as controls. The present study tested the hypothesis that smokers would exhibit larger SPNs in anticipation of smoking-related stimuli than would nonsmokers. Our paradigm involved the presentation of a fixation cross for 500 ms, followed by the presentation of a color picture (S1) on a computer monitor for 500 ms, followed by a second fixation cross for 3500 ms, followed by a second presentation (S2) of the same picture for 2000 ms. Following S2, another fixation cross appeared, signifying the beginning of a different S1-S2 trial using a randomly presented different picture. The participants viewed 10 color pictures of each of the three categories (smoking-related, emotionally positive, or emotionally neutral). Each picture was presented 5 times for a total of 150 trials. The participants were 12 smokers and 12 non-smokers, with a gender balance in each group. The mean age was 22 years. EEG was recorded using 16 electrodes placed at standard international 1020 scalp sites. Consistent with predictions, smokers exhibited significantly greater SPN amplitude in response to smoking-related pictures compared to neutral pictures (p<0.006), while non-smokers experienced a significantly smaller SPN to smoking pictures than to neutral (p<0.002) and to positive pictures (p<0.010). These findings are consistent with the incentive sensitization theory of addiction and other conditioning and cue-reactivity models. These findings suggest that the methods used in the present study might be useful to assess the effects of smoking cessation treatments and individual differences in the degree to which smokers are addicted to smoking and are sensitive to environmental stimuli associated with smoking.

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POS2-7 EFFECTS OF NICOTINE ON BRAIN ACTIVITY IN ANTICIPATION OF EMOTIONALLY POSITIVE VERSUS NEGATIVE PICTURES


It has been hypothesized by several models that the beneficial effect of nicotine on mood may in part be mediated by the ability of nicotine to decrease the anticipation of emotionally negative stimuli and to speed recovery from such stimuli. On the other hand, evidence suggests that nicotine may also enhance sensitivity to emotionally positive stimuli. These hypotheses were tested by assessing brain EEG activity in anticipation of affect-inducing pictures in 14 habitual smokers. The study used a double-blind, counterbalanced, within-subjects design with a practice session and 2 experimental sessions. After overnight smoking deprivation (12+ hr), active nicotine patches were applied to participants during one of the sessions, and placebo patches were applied during the other session. The picture stimuli were grouped in the following sequence on a computer monitor: (1) a fixation cross for 2250 ms; (2) a color picture (S1) for 2000 ms; (3) a second fixation for 2250 ms; and (4) a second presentation (S2) for 2000 ms of the same picture (S1). Following S2, another fixation cross appeared, signifying the beginning of a different S1-S2 trial using a new picture randomly presented from one of three affective categories (negative, positive, or neutral). Each session, the participants viewed 32 different color pictures of each of the three emotional categories. Each picture was presented as an S1 and 2250 ms later again as an S2. Following and in anticipation of negative pictures (during the last 1024 ms of the second fixation) there was increased frontal brain activation (decreased EEG theta-1 power) to a significantly smaller degree when participants were on the nicotine patch than when they were on the placebo patch. Thus, nicotine appeared to reduce frontal brain reactivity in response to and anticipation of emotionally negative pictures. These effects were not observed with emotionally positive or neutral pictures. These findings with other recently published studies suggest that nicotine can reduce brain reactivity to emotionally negative pictures.

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**POS2-8**

**EFFECTS OF PREGNANCY ON NICOTINE SELF-ADMINISTRATION, LOCOMOTOR ACTIVITY, AND NICOTINE PHARMACOKINETICS IN RATS**

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Because of the adverse effects of smoking during pregnancy, understanding the factors that influence maternal smoking and developing better treatments to help women quit smoking during pregnancy is a major public health priority. Animal models could be useful for this purpose. The purpose of the present study was to examine nicotine self-administration (NSA) in rats as an animal model of smoking during pregnancy, and begin to examine potential behavioral and pharmacological factors that may contribute to the changes in NSA observed during pregnancy. In Experiment 1, female rats were trained to self-administer nicotine (0.03 mg/kg/inj, i.v.) under a fixed-ratio (FR) 3 schedule during 23-hr sessions. Once trained, rats were mated, and then NSA was examined throughout gestation and lactation. A group of nonpregnant females was similarly trained and NSA was monitored for a period comparable to the length of gestation (21 days). In Experiment 2, spontaneous locomotor activity of nonpregnant females was compared to pregnant females throughout gestation and lactation to examine the motor effects of preganancy. Experiments 3 and 4 compared female rats with nicotine (0.1 mg/kg, i.v.) in male, nonpregnant female, and pregnant females in the first and third trimester of pregnancy and the first week of lactation. NSA decreased over the course of pregnancy, with NSA significantly lower in the third trimester compared to nonpregnant controls. NSA remained suppressed for up to 10 days after lactation. Locomotor behavior was also significantly suppressed during the second and third trimesters and throughout lactation. Nicotine elimination was slower in pregnant females compared to nonpregnant females only in the third trimester. The present findings demonstrate that NSA, locomotor behavior, and nicotine elimination in rats are decreased during late pregnancy, suggesting that either nonspecific motor effects, decreased nicotine elimination, or both could contribute to the decrease in NSA. The present study provides an animal model to examine pharmacological and behavioral factors that may influence smoking during pregnancy.

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**POS2-9**

**LOW DOSE NICOTINE TREATMENT DURING ADOLESCENCE INCREASES SUBSEQUENT COCAINE REWARD**

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Adolescence is a critical period for the initiation of drug use, starting with tobacco and alcohol and progressing to marijuana and other illicit drugs. These findings have led to the suggestion that tobacco and alcohol are “gateway” drugs that sensitize maturing reward pathways to the effects of illicit substances such as cocaine. To test this hypothesis, we have examined whether low-dose nicotine pretreatment alters acquisition of cocaine self-administration in adolescents more than in adults. Male and female Sprague-Dawley rats, aged postnatal day (P) 28 or P66, were given two daily intravenous injections of nicotine (0.03 mg/kg/0.1 ml) or saline for four days. At P32 and P90, rats were placed in self-administration chambers and tested for acquisition of cocaine (0.2 or 0.5 mg/kg/inj) for five days. Data were collapsed across cocaine dose and sex since there was no significant effect of these variables. Adolescent rats pretreated with nicotine exhibited significantly greater cocaine-reinforcing responding as compared to saline controls or adults (p < 0.01). This effect was evident as early as the first day, suggesting that nicotine sensitizes adolescent rats to the rewarding effects of cocaine. In addition, this drug pretreatment effect did not generalize to all rewards, since nicotine did not increase responding for sucrose pellets in adolescents. Neurochemical studies are currently being conducted to determine the underlying mechanisms. These findings provide evidence that the adolescent brain is uniquely vulnerable to the effects of nicotine and support the “gateway” hypothesis of teenage drug use.

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**POS2-10**

**NICOTINE MODULATES GLUTAMATE RELEASE ONTO MEDIUM SPINY NEURONS IN MOUSE STRIATUM**

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The nigrostriatal dopaminergic pathway is involved in drug abuse, including nicotine addiction. Medium spiny neurons (MSNs) in striatum, relay dopamine signals. Although MSNs are silent at rest, they can be activated by the convergence of glutamatergic innervation. Using whole-cell patch clamp recordings in brain slices containing striatum, we tested nicotine’s effects on spontaneous glutamatergic excitatory postsynaptic currents (sEPSCs), recorded on voltage-clamped MSNs. Nicotine (1000 nM) increased sEPSC frequency within the first 5 min of perfusion, and reached maximal effect after 10 min perfusion (164 ± 11% of control in 1000 nM, n=5, p=0.007; 149 ± 15% of control in 30 nM, n=4, p=0.03). Meanwhile, nicotine increased firing rate of current-clamped MSNs. These effects lasted more than 10 min after washout of nicotine. Mecamylamine (10 microM) blocked these effects. Both the slow onset and recovery of nicotine’s enhancement of sEPSCs, and lack of a clear dose-response relationship, seems to support desensitization of nAChR as a mechanism. Sulpiride, an antagonist of D2-like dopamine receptors (D2Rs), increased sEPSC frequency, indicating that glutamate release was inhibited by endogenous dopamine via the activation of D2Rs. The blockade of D2Rs attenuated nicotine’s facilitation of sEPSC. These results suggested that not only activation, but also desensitization, of presynaptic nACHR(s) modulated glutamate release and the activity of MSNs in striatum. Nicotine’s enhancement of sEPSC frequency is at least partially related to the depression of dopaminergic functioning, probably via nAChR desensitization.


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**POS2-11**

**SEX BUT NOT STRAIN INFLUENCES VOLUNTARY NICOTINE INTAKE IN ADOLESCENT MICE**

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The effects of nicotine in adult mice have been shown to be highly dependent on genetic background, but the interactions between genetics and the pharmacological effects of nicotine intake during adolescence are relatively unknown. Voluntary oral nicotine consumption models have been adapted for use with adolescent mice given the ease of administration, continuous nicotine exposure, and production of acceptable levels of nicotine bioavailability (e.g., Klein 2004). In contrast to studies with adult mice, Klein et al (2005) reported that there appear to be no strain-related differences in nicotine intake and cotinine levels between 2 inbred strains of mice. This preliminary finding suggested that age might be an important contributor to the expression of strain differences in nicotine intake. The present experiment was conducted to follow-up on this report and offered mice a higher concentration of nicotine to expand the dose-response curve. Voluntary oral nicotine consumption behavior was examined in 50 periadolescent (35 days old) male and female C57BL/6J and DBA/2 mice, using a three-bottle choice design. Mice had continuous access to either water or 2 freebase nicotine solutions (50 and 100 µg/ml) over a 7-day period. Consistent with our earlier report, there were no strain differences in nicotine intake (both ml and mg/kg) across the 7-day test period. Females consumed significantly more nicotine (mg/kg) across the experiment than did males (p<0.05). Consistent with reports that nicotine consumption is inversely related to body weight (e.g., Grunberg 1982), average 7-day nicotine intake (mg/kg) was negatively correlated with body weight across the test period (r=-0.58, p<0.05) for all mice. Although sex differences in voluntary nicotine intake in adolescent C57BL/6J have been reported (e.g., Klein et al 2004), the finding that DBA/2 female mice consume more nicotine than their male C57BL/6J and DBA/2 counterparts is new and suggests that sex differences may be more important in determining vulnerability to consume nicotine than strain alone. Further studies are needed to explore this possibility.

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**POS2-12**

**BEHAVIORAL MARKERS OF THE TRANSITION TO DEPENDENCE IN RATS GIVEN LIMITED AND EXTENDED ACCESS TO NICOTINE**

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Research with cocaine and other drugs of abuse suggests that escalation of intake and increased responding on a progressive ratio (PR) schedule may be important behavioral markers of the development of addiction in animals. These behavior changes have not been reported for nicotine. We investigated whether addictive-like behaviors are observed among rats given extended or limited access to nicotine (0.06 mg/kg) on an FR-2 schedule of reinforcement over a prolonged period of time. In study #1, 6 rats lever-pressed for nicotine, 22 hrs per day, 7 days per week. In study #2, 10 rats lever-pressed for nicotine, 1 hr per day, 5 days per week. Both studies continued for 12 weeks, and a PR test was conducted every two weeks. Intusions of nicotine were paired with the onset of a 5-s sec tone and a 20-sec cue light, a stimulus with little unconditioned reinforcing value. Behavioral data were collapsed into weekly averages and analyzed using repeated measures ANOVA with linear contrasts to assess mean change over time. Results of the 22-hr access study showed no significant increase in daily intusions, but a 57% linear increase in first-intusion flows (F=7.4, p<.05), and a 31% linear increase in intusions earned on a PR schedule (F=8.8, p<.05). One-hour access revealed a 134% linear increase in intusions over weeks (F=14.0, p<.01), with a 213% increase in intusions during the first 10 min of each session (F=31.4, p<.01), and a 150% linear increase in intusions earned on a PR schedule (F=28.9, p<.001). Interestingly, latency to first intusion earned (log transformed to normalize distribution), also decreased linearly over the course of the 1-hr study (F=56.8, p<.001). The increase in intusions earned from the first to the last PR test was highly correlated with the increase in intusions earned from the first to the last PR test (r=.721, p<.05). These results indicate that addictive-like behaviors may develop in rats self-administering nicotine for a prolonged period of time. These and other behavioral changes (e.g. responding despite aversive consequences), and the conditions that foster them warrant further investigation.

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**POS2-13**

**ANTIDEPRESSANT-LIKE PROPERTIES OF PARTIAL AGONISTS OF HIGH AFFINITY NICOTINIC ACETYLCHOLINE RECEPTORS IN SEVERAL ANIMAL MODELS**

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Recent studies suggest that the nicotine in tobacco modulates neuronal systems regulating mood. Moreover, it appears that blockade rather than activation of beta2-containing alpha(3)beta(2) nicotinic acetylcholine receptors (nAChRs) may lead to antidepressant-like effects. We tested cytisine and several novel derivatives, all partial agonists of alpha(4)beta(2) and alpha(3)beta(4)* nAChRs. We investigated their potential antidepressant-like properties by using several behavioral tests of acute and chronic antidepressant effects: forced swim test, novelty-suppressed feeding, and c-fos expression to identify potential neurological correlates of the antidepressant-like effects of cytisine. Further, we investigated whether nicotine could potentiate the antidepressant effects of a serotonin agonist and its derivatives had antidepressant-like effects in several animal models of antidepressant efficacy. Additionally, cytisine was able to potentiate the antidepressant-like effects of a serotonin agonist and its derivatives in several animal models of antidepressant efficacy. The relationship between emotional disturbance and smoking is complex because of the multifaceted nature of affective symptomatology. However, variance in multiple forms of emotional disturbance can be conceptualized as, and reduced to, two primary latent dimensions: positive (PA) and negative affect (NA) (Watson & Clark, 1990). The current study examined the degree to which PA and NA play a role in smoking. Current smokers (n=116; >10 cig/day) and never smokers (n=74) completed measures of recent depression (CESD; Center Epidemiological Studies Depression Scale), anxiety (BAI; Beck Anxiety Inventory), anhedonia (SHAPS; Snaith Hamilton Pleasure Scale), and positive and negative mood (PANAS-PM & PANAS-NM). Confirmatory factor analysis was used to model latent dimensions of PA and NA from these measures. The model fit the data well, Chi sq (3, N=190)=2.27, p=.5166, SRMR=.023. Loadings on PA were as follows: SHAPS (.49), PANAS-PM (.78), and CESD (.37); loadings of BAI and PANAS-NM were fixed to zero. Loadings on PA were: CESD (.65), BAI (.87), and PANAS-NM (.83); loadings of SHAPS and PANAS-PM were fixed to zero. PA and NA were modestly correlated but distinguishable, r=-.46. Factor scores were created for latent PA and NA based on the model's parameter estimates. Scores markedly higher on latent PA, p=.0006, Cohen's d=1, and only slightly lower on PA, p=.0794, d=.26, than never smokers. Among smokers, latent PA was correlated with Borderline-Corrected alpha (0.06<alpha<0.031) with QSU-brief scores (r=-.39), but was unrelated to other smoking characteristics (FTND, WISDM-88 dependence motives, QSU-brief scores, and withdrawal severity during past quit attempts). Latent NA was significantly and positively correlated with Affiliative, Automaticity, Loss of Control, Behavioral Choice, Cue Exposure, Negative Reinforcement, and dependence motives. QSU-brief scores, and withdrawal severity during past quit attempts (r=.28 to .50), but was unrelated to FTND or cig/day. These findings suggest that NA is strongly associated with tobacco dependence severity, whereas low PA is primarily associated with development to smoke.

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**POS2-14**

**THE EFFECTS OF SMOKING CESSATION ON OBJECTIVE MEASURES OF SLEEP: A PRELIMINARY ANALYSIS**

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Quitting smokers commonly report having disturbed sleep, however, the world's literature on smoking cessation and objectively measured sleep disturbance is based on fewer than 80 subjects. To explore this issue in greater depth, a randomized, 4-group design with repeated measurements of withdrawal and sleep disturbance has been initiated to evaluate the effect of smoking cessation following treatment with behavioral counseling in combination with: (1) either placebo bupropion and nicotine patch; (2) active bupropion; (3) active patch; or (4) combined active bupropion and patch in male and female smokers. Thus far, nine subjects (4 women) have been screened with a medical examination, a structured psychiatric interview, and a clinical sleep study. They were then randomized for active or placebo medications in a double-blinded fashion and then studied in the sleep laboratory while still smoking baseline) and on their first quit night. Their nocturnal polysomnography data were scored by two experienced researchers and standard sleep measures determined. These included sleep efficiency (%), calculated as the percentage of time in bed spent asleep, minutes of wakefulness measured after initial sleep onset (WASO) and the time spent in stages 1, 2, 3, 4, and REM sleep. The data were then analyzed using paired t-tests, with the blind as treatment condition maintained. There was a significant (p<.05) decrease in SE% from baseline (92.5 +/-5%) to quit night (86.1 +/-12%), due to a significant (p<.05) increase in the amount of WASO from 23.4 +/-14 minutes to 53.6 +/-56 minutes. No other measured variables differed between the two nights. The variance in SE% and WASO increased dramatically on the quit night. WASO varied between 76 and 192 minutes, between two subjects having more than two hours combined wakefulness during the night. Even with this small initial sample it is clear that smoking cessation significantly impacts sleep by increasing nocturnal wakefulness. The variability in this effect may well relate to the different drug conditions used. Evaluation of this hypothesis will need to wait until the blind is broken.

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POS2-16 AUTOMATIC AFFECTIVE RESPONSES TO SMOKING CUES ARE ASSOCIATED WITH CRAVING AND DEPENDENCE

Andrew J. Waters, Ph.D.*, Brian L. Carter, Ph.D., Jason D. Robinson, Ph.D., David W. Wetter, Ph.D., and Paul M. Cinciripini, Ph.D., UT M. D. Anderson Cancer Center

The Implicit Association Test (IAT) has been used to assess spontaneous, automatic affective responses to drug cues. In the smoking IAT, participants are asked to respond rapidly to a key-stroke to items representing two concepts (e.g., smoking + good; and, not smoking + bad) (Task 1). In Task 2, the assignments for one half of the each pairs are switched (such that smoking + bad shared a response, likewise not smoking + good). The IAT effect is the difference in response times on Task 1 vs. Task 2. More positive IAT effects (faster responses when smoking is paired with good) reflect more positive automatic affective responses to smoking cues. Previous research has shown that smokers have more positive IAT effects than non-smokers. Here, we assessed whether IAT effects are associated with measures of smoking motivation and dependence in daily smokers. Smokers (n=53) completed four experimental sessions. They abstained from smoking before two of the two sessions (NonAb). On one of the Ab/NonAb sessions they smoked a cigarette about 30 minutes before completing the IAT (Smoked), and on the other they did not smoke (NoSmoked). Overall, participants had negative IAT effects, indicating that they found the classification task easier when smoking was associated with bad. Using repeated measures ANOVA, IAT effects were significantly moderated by state (F(3,156)=3.49, p<.05). IAT effects were more positive in the Ab-Smoked condition, and most negative in the NonAb-Smoked condition. Using Generalized Estimating Equations analyses, IAT effects were positively associated with pre-task QSU-Brief craving ratings (β=.005), which persisted when controlling for state and session. Importantly, there were no significant differences among smokers’ spontaneous affective responses to smoking cues.

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POS2-17 REMEMBERING THE WORST AND THE LAST MOMENTS: A PEAK-END ANALYSIS OF MENTAL AND RETROSPECTIVE ASSESSMENTS OF NEGATIVE AFFECT IN SMOKERS

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Background: The Peak-End rule states that when individuals are asked to remember a past emotional episode, they reliably draw on two moments of that episode, the moment when they experience the most intense affect (Peak) and the last moment (End), to describe the entire experience. This paper applied the Peak-End rule to examine momentary and retrospective assessments of smokers during a quit attempt. We hypothesized that a combination of the Peak and the End assessments of negative affect (NA) that smokers experienced on quit day would better predict their retrospective assessment of NA than would the average of all momentary reports.

Methods: 165 smokers (53% females, mean age=43) who enrolled in a RCT for smoking cessation and completed at least 7 momentary assessments of NA on their quit day. Momentary assessments (MA): Smokers rated, in real-time, their NA on a hand-held computer by responding to the question “Right now, my mood is negative (e.g., irritable, sad, anxious, angry).” Retrospective assessment (RA): Smokers rated, at the end of the day, their overall NA by responding to the question “I have been bothered by negative moods such as anger, frustration, and irritability.” Peak-End average (PE) was calculated by taking the simple average of the Peak and the End ratings. Average of all MAs (AVG) was also calculated by taking the simple average of all MAs recorded on the same day.

Results: We conducted two separate hierarchical multiple regression (HMR) analyses where predictors were entered into the model in steps. Results from the first HMR showed that, after partialling out the variance already accounted for by AVG, adding PE in the second step increased substantially the explanatory power in predicting RA. However, in the second HMR, the results showed that, after partialling out the variance already accounted for by PE, adding AVG in the second step did not make unique, incremental contribution in the prediction RA.

Conclusions: The findings suggested that a combination of the Peak and the End moments is a better predictor of the RA than an aggregate all MAs. Implications of the findings will be discussed.

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POS2-18 CHANGE IN POSITIVE AND NEGATIVE AFFECT SCORES DURING ACUTE WITHDRAWAL AMONG ADOLESCENT SMOKERS

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Prior research among tobacco-dependent adults suggests that acute tobacco withdrawal is associated with an increase in negative mood symptoms. Our aim was to examine changes in positive and negative affect induced by an 18-hour deprivation period among tobacco-dependent adolescents during the pretrial phase of a cessation treatment protocol. Participants included 26 adolescents (56% female, 65% Caucasian, age 16.2 ± 1.3 years, 3.4 ± 1.9 years smoking). Participant affect was assessed at three time points over a two-week baseline period of ad lib smoking and immediately following the acute deprivation period, using the 20-item PANAS (Positive and Negative Affect Schedule). The PANAS consists of 20 items assessing positive (10 items) and negative (10 items) affect, rated on a Likert scale from 1 (“very slightly or not at all”) to 5 (“extremely”). One-way repeated measures analysis revealed that positive affect scale scores were significantly lower at 18 hours of bio-verified abstinence compared to baseline measures (p<.011). Specifically, participants had significantly lower scores during acute withdrawal on the items “interested” (p=.011), “proud” (p=.041), “excited” (p=.015), “determined” (p=.002), and “active” (p=.002). There was no change in overall negative affect scale scores or individual negative affect items, with the exception of a decrease in the “distressed” item (p=.050). Further analysis using a larger sample will examine the potential effects of anticipatory withdrawal and pre-abstinence reduction in cigarette consumption. If confirmed in a larger sample of teen smokers, our findings suggest that early withdrawal may more profoundly impact positive rather than negative affect among dependent adolescent smokers.

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POS2-19 PHARMACOLOGICAL AND EXPECTANCY-RELATED EFFECTS OF NICOTINE ON COGNITION USING A BALANCED-PLACEBO DESIGN

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This experiment was conducted to compare the role of stimulus expectancy (manipulated by instructional sets) to the pharmacological changes in cognition induced by cigarette smoking. Although a substantial body of research points to cognitive improvements from cholinergic stimulation by specific nicotinic receptor agonists, the role of non-pharmacological factors has been understudied. We used a balanced-placebo design (i.e., expect either nicotine or no nicotine and receive either nicotine or no nicotine) to compare the pharmacological and expectancy effects of nicotine (0.60 mg) in cigarettes. A total of 120 college students who smoke (mean age=22.2 years old) were assigned to 1 of the 4 experimental groups, rated the cigarette that we provided on a number of dimensions using the Cigarette Evaluation Scale, and completed questionnaires on smoking urges, tension, and energy. Participants also completed tests of memory as well as predictions of memory. The strongest effects were noted using the Cigarette Evaluation Scale: 11 out of 12 dimensions were influenced by at least one variable, and two dimensions were influenced by both. Instructional set alone was sufficient to produce statistically significant positive changes in response to the items “Made Me Feel Awake,” “Helped Me Concentrate,” and “Reduced My Hunger.” Instructional set also produced significant effects along with nicotine for the items “Was Calming” and “Was Satisfying.” The presence of nicotine significantly reduced smoking urges, but instructional set alone reduced tension after smoking. Neither variable produced significant effects on memory or memory predictions. In contrast to past studies, manipulation checks suggested that the integrity of our balanced placebo design was largely intact at the end of the experiment. These data provide solid evidence for the role of non-pharmacological factors such as stimulus expectancy in variables that may contribute to the maintenance of smoking behavior. Increased used of the balanced-placebo design may continue to uncover expectancy effects that match, or even exceed, the pharmacological effects studied using more traditional designs.

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POS2-20

CONFIRMATORY FACTOR ANALYSIS OF THE MINNESOTA NICOTINE WITHDRAWAL SCALE

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Accurate assessment of nicotine withdrawal is essential to the development of effective smoking cessation treatment. Although prior studies have shown the Minnesota Nicotine Withdrawal Scale (MNWS) to be both reliable and valid, factor analysis of the scale has resulted in single and multiple-factor solutions. We examined the factor structure of the MNWS in an attempt to resolve these discrepant findings. Additionally, since craving was dropped from the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM) as a withdrawal symptom, we also examined whether craving coheres with other MNWS symptoms, in order to decide whether it should be included as an item assessed by the scale. We examined the factor structure of the MNWS using confirmatory factor analysis in three clinical research samples of smokers trying to quit (total N=723). Three confirmatory factor analytic models, based on previous research, were tested with each of the three study samples at baseline and at multiple points in time post-quit. A unidimensional model including all eight MNWS items was found to best explain the data. This model also produced fair to good internal consistency estimates and showed that increases in withdrawal were associated with poor smoking outcome for two of the clinical studies. Additionally, these data revealed that craving should be included in the MNWS total score. These results offer compelling evidence for reporting a total score using all eight items of the MNWS, regardless of the point in time of assessment. From a clinical perspective, our data suggest that the MNWS provides a brief measure of overall withdrawal severity that could be used to monitor patients during treatment and potentially guide treatment decisions.

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POS2-21

NICOTINE-DEPENDENT ADOLESCENTS: SELECTIVE ATTENTION AND WORKING MEMORY DURING ACUTE TOBACCO WITHDRAWAL

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Previous research in adults indicates that acute nicotine and tobacco withdrawal impairs cognitive performance, but limited findings are available examining adolescent cognitive performance during acute withdrawal. We hypothesized that nicotine-dependent adolescents experience decrements in cognitive performance during acute tobacco deprivation. We observed changes in cognition and working memory of adolescents at the end of an 18-hour smoking abstinence period in a sample of treatment seeking tobacco-dependent adolescents. During the pre-treatment phase of a double-blind, placebo-controlled, randomized tobacco cessation trial, 24 adolescents (female 64%, Caucasian 64%; age 16.3, SD 1.3 years, cigarettes per day 14.2, SD 7, Fagerström Test for Nicotine Dependence 2.5, SD 2.6) were tested before and after 18 hours of bio-confirmed tobacco abstinence. Neuropsychological tests [1-Back and 2-Back (n=24) and 2-Letter Search (n=20)] were administered at baseline during ad lib smoking and at the end of the 18-hour abstinence period. One-way repeated measures analysis of variance of accuracy scores and reaction time revealed a significant decrease in accuracy on the 1-Back task after deprivation compared to baseline (p=.048), and reaction time was significantly prolonged (p=.006). No significant difference was found in accuracy or reaction time on the 2-Back task. Participants were significantly less accurate in the 2-Letter Search during acute withdrawal compared to baseline (p=.024), and the analysis revealed a significantly significant decrement was found in the reaction time on the 2-Letter Search task (p=.052). Although these preliminary findings suggest that acute tobacco deprivation impacts both working memory and selective attention, analyses of a larger sample are warranted to understand the impact of tobacco deprivation on various components of cognitive function among adolescents.

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POS2-22

SUBSCALE CONSOLIDATION AND ITEM REDUCTION OF THE 68-ITEM WISCONSIN INVENTORY OF SMOKING DEPENDENCE MOTIVES (WISDM)

Steven S. Smith, Ph.D.*, Megan E. Piper, Ph.D., Michael C. Fiore, M.D., M.P.H., and Timothy B. Baker, Ph.D., Univ of Wisconsin School of Medicine and Public Health

The Wisconsin Inventory of Smoking Dependence Motives (WISDM-68) is a 68-item theoretically-derived measure of tobacco dependence consisting of 13 subscales measuring a variety of smoking motives. The WISDM-68 subscales have demonstrated good internal consistency as well as good convergent and predictive validity (Piper et al., 2004). The rich theoretical basis of the WISDM suggests promise in using this scale in experimental and clinical studies aimed at increasing understanding of different mechanisms of nicotine dependence (ND). However, because some of the WISDM-68 subscales are highly intercorrelated, there may be a smaller number of subscales that are psychometrically distinct. In order to ascertain subscale distinctiveness versus overlap, an iterative series of exploratory factor analyses (EFAs) of the 68 WISDM items was computed using the original data (n=775 smokers) collected by Piper et al. (2004) to approximate nonoverlapping factors. EFAs were computed using maximum likelihood (ML) extraction and oblique promax rotation of factors. This new factor structure was then tested via confirmatory factor analyses (CFAs) in an independent sample of 313 smokers from the Wisconsin Behavioral Health Survey (WBHS). A 9-factor model was identified in the EFAs that preserved six of the original WISDM-68 subscales and that identified three new subscales that combined the remaining seven original subscales. In order to construct a new set of WISDM subscales that maximize the number of distinct factors in a reduced set of items, a priori sets of items were made to identify three items for each of the 9 factors that strongly load on a given factor but also have low cross-loading with other factors. This new WISDM model (9 subscales comprising 27 items) was tested using WBHS data and the model fit the data well: Chi-square=688.4 (df=2132), CFI=.85, and RMSEA=.054 compared to a 68-item subscale model: Chi-square= 4880.4 (df=2132), CFI=.84, and RMSEA=.064. These analyses provide evidence that the new set of 9 WISDM subscales replicates in an independent sample and shows promise in exploring the multidimensional nature of ND.

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POS2-23

LINKING MEASURES OF ADOLESCENT NICOTINE DEPENDENCE TO A COMMON LATENT CONTINUUM

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Using the theoretical model of Nicotine Dependence (ND) operationalized within the Diagnostic and Statistical Manual of Mental Disorder, fourth Edition (DSM-IV: APA, 1994) as a frame of reference, we used methods based in item response theory to link alternative instruments assessing adolescent nicotine dependence severity onto a common latent continuum. A multi-ethnic longitudinal cohort of 1,039 8th-12th graders selected from the Chicago Public Schools (CPS) were followed through 5 waves of household interviews over two years. 674 youth reported tobacco use during one of these survey waves and completed measures of DSM-IV ND, the Modified Fagerstrom Tolerance Questionnaire (mFTQ: Prokhorov et al., 1998) and the Nicotine Dependence Syndrome Scale (NDSS: Shiffman et al., 2004) as well as supplementarily administered measures of a variety of smoking motives. The WISDM-68 subscales have demonstrated good internal consistency as well as good convergent and predictive validity (Piper et al., 2004). The rich theoretical basis of the WISDM suggests promise in using this scale in experimental and clinical studies aimed at increasing understanding of different mechanisms of nicotine dependence (ND). However, because some of the WISDM-68 subscales are highly intercorrelated, there may be a smaller number of subscales that are psychometrically distinct. In order to ascertain subscale distinctiveness versus overlap, an iterative series of exploratory factor analyses (EFAs) of the 68 WISDM items was computed using the original data (n=775 smokers) collected by Piper et al. (2004) to approximate nonoverlapping factors. EFAs were computed using maximum likelihood (ML) extraction and oblique promax rotation of factors. This new factor structure was then tested via confirmatory factor analyses (CFAs) in an independent sample of 313 smokers from the Wisconsin Behavioral Health Survey (WBHS). A 9-factor model was identified in the EFAs that preserved six of the original WISDM-68 subscales and that identified three new subscales that combined the remaining seven original subscales. In order to construct a new set of WISDM subscales that maximize the number of distinct factors in a reduced set of items, a priori sets of items were made to identify three items for each of the 9 factors that strongly load on a given factor but also have low cross-loading with other factors. This new WISDM model (9 subscales comprising 27 items) was tested using WBHS data and the model fit the data well: Chi-square=688.4 (df=2132), CFI=.85, and RMSEA=.054 compared to a 68-item subscale model: Chi-square= 4880.4 (df=2132), CFI=.84, and RMSEA=.064. These analyses provide evidence that the new set of 9 WISDM subscales replicates in an independent sample and shows promise in exploring the multidimensional nature of ND.

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TEST OF MEASUREMENT INVARiance OF THE FTND ACROSS DEMOGRAPHIC GROUPS: ASSESSMENT, EFFECT SIZE, AND PREDICTION OF CESSATION

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No study has tested measurement invariance of the FTND across adult smokers of different sex/ethnic groups: that is the degree to which FTND questions are indicators of nicotine dependence unbiased by subgroup membership. If the FTND is not measurement invariant: 1) observed differences in dependence across subgroups and differences in associations of FTND score with outcomes across subgroups (e.g. cessation) may be due to measurement bias; 2) use of FTND threshold scores to screen for selection into treatment or genetic studies would bias across subgroups. We tested the questionnaire (mFTQ) and the Hooked On Nicotine Checklist (HONC) among American men and women using a sample of current and former regular smokers (n=9,038) from a community-based telephone screening of 27,913 individuals for the Collaborative Study of the Genetics of Nicotine Dependence. We tested measurement invariance in 3 ways: 1) tested for item-level bias using Multiple Indicator Multiple Cause or MIMIC SEM models; 2) examined magnitude of item-level bias; and 3) tested effects of bias on cross-group differences in the association of FTND with quitting smoking. For current FTND and FTND when smoking the most, MIMIC models that did not correct for sex and level used as covariates fit sufficiently well to the data that did: X2=377.1, df=13, p<.001; and X2=608.9, df=13, p>.001. However, effect sizes and variances explained by measurement bias were small: summed across all items total variance explained was <2% for any subgroup. The association between nicotine dependence and quitting was unaffected by a model that accounted for measurement variance or not. A one-point increase in dependence was associated with a reduced likelihood of quitting (OR=0.67, 95% CI 0.62–0.72). Likelihood of quitting differed among sex/ethnic groups compared to EA men independent of dependence (OR=1.17, 95% CI 1.05–1.32), OR=1.01, 95% CI 0.90–1.06; and OR=1.53, 95% CI 0.43–0.64; for EA women, AA men and AA women respectively). Statistically significant measurement variance across these subgroups was found but the resulting bias has a small effect on FTND items and no impact on the association of FTND with quitting. Supported by NCI P01 CA088392.

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FACTORIAL AND CONVERGENT VALIDITY OF NICOTINE DEPENDENCE MEASURES IN ADOLESCENTS: TOWARDS A MULTIDIMENSIONAL APPROACH

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The acknowledgment of nicotine dependence among adolescents has lead to considerable debate about the construct of nicotine dependence, as well as its measurement within the adolescent smoking population. Of the instruments available for measurement of adolescent nicotine dependence, the modified Fagerström Test of Nicotine Dependence (mFTQ) and the Hooked On Nicotine Checklist (HONC) are frequently used, short and easily applicable scales. For both the mFTQ and the HONC previous research reported one-factor solutions. Recently, however, it has been suggested that nicotine dependence in adolescents is a multidimensional phenomenon. The aim of the present study was to develop a multidimensional scale for the measurement of nicotine dependence, based on the mFTQ and the HONC. A survey was conducted among 33 Dutch secondary schools, resulting in 2,047 smokers who completed the questionnaires. Motivation to quit and number of previous quit attempts were assessed and used as covariates since less severe dependence in adolescents is indexed by mFTQ items made discriminations at the higher end of the severity continuum. The new multidimensional measure fitted the data satisfactorily and showed good psychometric properties. Furthermore, the three components of the combined scale were uniquely related to the convergent construct variables of motivation to quit and number of quit attempts, indicating that nicotine dependence in adolescents is indeed a multidimensional construct. To conclude, capturing the multiple components of the overarching construct of nicotine dependence requires a multidimensional measurement. In this study we showed that a new, reliable and multidimensional measurement could be constructed over the mFTQ and the HONC.

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DO SMOKERS KNOW WHAT THEY [AND WE] ARE TALKING ABOUT? THE CONSTRUCT VALIDITY OF NICOTINE DEPENDENCE MEASURES

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Nicotine dependence measures are used to make predictions about smokers’ dependence levels, their relapse rates and even the genetics of nicotine dependence. However, little work has examined the accuracy of smokers’ self-reports about their dependence-related behaviors and responses. This study, as part of a larger clinical trial, uses self-report nicotine dependence measures completed by smokers (n=608, 60% female, 74% Caucasian) pre-quit to predict smokers’ responses to ecological momentary assessment assays of smoking behavior, nicotine withdrawal, negative affect and positive affect from one week pre-quit to one week post-quit. Results show that, for the most part, smokers’ responses on nicotine dependence subscales predict responses on withdrawal and affect measures that we gathered up to 2 weeks later. For example, smokers’ responses on the urge scale of the WISDM predicted the response to “desire to smoke” pre-quit (F (df=1)=41.28, p<.001), on the quit day (F (df=1)=16.34, p<.001) and post-quit (F (df=1)=22.44, p<.001); scores on the WISDM cognitive enhancement scale predicted “had trouble concentrating” pre-quit (F (df=1)=18.99, p<.001) on the quit-day (F (df=1)=57.73, p<.001) and post-quit (F (df=1)=38.08, p<.001); finally scores on the FTND item 1, “How soon after you wake up do you smoke your first cigarette?” predicted morning ratings of “desired to smoke” pre-quit (F (df=1)=40.00, p<.001), on the quit day (F (df=1)=9.87, p<.002) and post-quit (F (df=1)=2.53, p<.001). These results support that the mFTQ and the HONC can represent the construct of nicotine dependence, at all levels of dependence and so isolate domain-specific predictive relations (e.g. urges, negative affect, morning smoking). Also, we will present analyses that test whether the predictive validities of dependence measures are enhanced by abstinence. The overall conclusion of these analyses is that nicotine dependence measures reflect both overall dependence levels as well as domain-specific behaviors and symptoms.

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CHARACTERIZING THE NICOTINE DEPENDENCE CONSTRUCT AMONG ADOLESCENT SMOKERS WITH NONPARAMETRIC ITEM RESPONSE MODELS

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Despite recent efforts to operationalize the nicotine dependence syndrome among adolescents, little is known regarding the relative severity of dependence symptoms assessed by different measures. The modified Fagerström Questionnaire (mFTQ) and the Hooked on Nicotine Checklist (HONC) were developed specifically to assess nicotine dependence among adolescent smokers, and each evaluates different types of symptoms. Several studies have compared the relative utility of these instruments for characterizing adolescent nicotine dependence. Although item response models have been applied to the mFTQ, these measures have not been previously evaluated concurrently to identify which symptoms are associated with lower or higher levels of nicotine dependence. Based on theory and previous empirical research, it was hypothesized that symptoms assessed by the HONC would be associated with lower levels of nicotine dependence severity than symptoms assessed with the mFTQ. The present study included adolescent smokers (n=109, 58% female, 71% White; 96% established smokers) participating in a prospective investigation of adolescent smoking cessation efforts. This study assessed the unidimensionality of the nicotine dependence construct as characterized by the HONC and the mFTQ and utilized a nonparametric item response model to characterize symptoms as associated with lower and higher levels of nicotine dependence. Results indicated that HONC and the mFTQ items could be linked to a single latent construct. The relative severity of the HONC and mFTQ symptoms was consistent with predictions. Aside from the ‘inhale’ symptom of the mFTQ which was the least severe and exhibited little ability to discriminate among the underlying continuum, most of the HONC items captured variability at the lower range of the dependence severity continuum. In contrast, mFTQ items made discriminations at the higher end of the severity continuum. Results suggest the HONC and mFTQ may provide complementary information in assessing nicotine dependence levels in established adolescent smokers.

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POS2-28

COMPARISON OF TWO ASSESSMENTS OF NICOTINE DEPENDENCE: A SELF-RATED DSM-BASED SCALE AND THE CIDI

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To meet the need for a brief case-finding tool that could produce a preliminary DSM-III-R and DSM-IV diagnosis of nicotine dependence for clinical or research purposes, a 13-item pencil-and-paper self-rating scale, the Nicotine Dependence Scale (NDS), was developed. Using a computer-administered adaptation of the structured interview (CIDI) as the gold standard, we compared the diagnosis of 502 smokers. The mean (±SD) age of the sample was 37 yrs ±11 years. Fifty-one percent of the sample was female. The smoking rate was mean (±SD) of 71.1 ±8.6 cigarettes/day with a mean (±SD) FTND score of 4.4 ±2.4. The CIDI scored 176 smokers (58% of the sample) as Nicotine Dependent. The NDS, using DSM-IV criteria, scored 221 smokers (73%) as Nicotine Dependent. Sensitivity and specificity were 82% and 40% respectively. When examining specific questions, we found that “smoking more than intended” yielded the highest level of agreement, 86%. “Continuing to smoke with the knowledge of health or medical problems” had the lowest level of agreement, 64%. An unexpected finding was that rate of endorsing withdrawal symptoms was always higher for the computerized CIDI. This may be due to difference in presentation of the symptom checklist in each instrument. We conclude that the NDS shows promise as a quick self-report scale for screening smokers for further assessment. The instrument has good predictive value and merits further research to improve its discriminating power.

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POS2-29

TOBACCO DEPENDENCE IN FEMALE MENTHOL AND NON-MENTHOL SMOKERS

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Previous research indicating greater urgency to smoke and higher cotinine levels among menthol smokers suggests that menthol cigarette smokers may be more addicted than non-menthol smokers. Differences in smoking and cessation history between menthol and non-menthol smokers have not been extensively studied, and these data may be particularly pertinent to black women who smoke menthol cigarettes with a higher frequency and have higher tobacco-related morbidity and mortality than white women. We collected smoking history as part of a phone interview from 892 women applying to a smoking cessation study (68.7% white, 20.2% black, mean age 41.4 ± 10.4; mean CPD=18.6 ± 8.4). Information on mentholated cigarettes and race were available for 530 participants. While only 31% of the sample smoked mentholated cigarettes, Black women (78.5%) were significantly more likely than white women (21.5%) to smoke mentholated brands, p<.001. Results from a series of race by cigarette-type ANOVAs indicated that white smokers reported higher cigarettes per day (19.7 ± 8.0) than did black smokers (15.3 ± 8.9; p<.001) and black menthol smokers had been most loyal to the type of cigarettes they smoked (p=.02). In regards to time to first cigarette (TTF) a Fisher’s Exact test revealed that 40.6 % of the smokers report smoking their first cigarette of the day within 5 minutes of waking up. Both black and menthol smokers had higher percentages of smoking within 5 minutes than did white and non-menthol smokers (p=.006 and p=.03, respectively). Specifically, 56.4% of black menthol smokers reported TTF of 5 minutes or less while 36.7% of white menthol smokers reported a TTF within 5 minutes of waking. There were no significant differences in age of initiation, number or length of quit attempts. Although white smokers continue to smoke more cigarettes per day, black smokers seem to be more at risk for high dependence, risk that appears to be enhanced by smoking menthol cigarettes.

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POS2-30

USE OF OTHER TOBACCO PRODUCTS AMONG U.S. ADULT CIGARETTE SMOKERS

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Cigarettes remain the most popular form of tobacco in the U.S., however, the accessibility of other tobacco products and the promotion of some products as reduced harm have prompted investigation of multiple tobacco use. A plethora of tobacco products are available in the U.S. including cigars, pipe tobacco, smokeless tobacco, and newer forms of tobacco such as bidis, kreteks, or use of waterpipes. Users of other tobacco products smoke more commonly with other tobacco users, and are at higher risk for developing tobacco related diseases. All forms of tobacco deliver carcinogens, but the specific consequences of using multiple forms of tobacco require further investigation, and few studies examine multiple tobacco use. This study examines current use of other tobacco products among U.S. adult cigarettes smokers by sociodemographic variables and smoking frequency. Data were analyzed from the 1995/96, 1998, 2000, and 2001/02 Tobacco Use Supplement to the Current Population Survey. Overall, 5.8% of U.S. smokers over the age of 18 used another tobacco product in 2001/02. Cigar use was the most prevalent at 3.5%, followed by chewing tobacco at 1.36%, and snuff at 0.97%. The least prevalent product was pipe tobacco at 0.78%. Multivariable analyses found that male current smokers were 12.9 more times more likely than females to use at least one additional product; everyday male smokers were 11.7 times more likely, and non-daily male smokers were 17.2 times more likely than their female counterparts to use at least one additional product. Smokers aged 18-24 were 2.85 times more likely than those 65 or older to use an additional product; and smokers living in the Northeast were least likely of all geographic groups to use multiple forms of tobacco when compared to smokers living in the West. Although the use of other tobacco products by U.S. adult cigarette smokers declined 27% from 1998 to 2001/02, a number of factors highlight the need to monitor concurrent tobacco use, including the increase of clean indoor air laws, the promotion of smokeless and other tobacco products as a safer alternatives to cigarettes, and the availability of new forms of tobacco products.

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POS2-31

THE DEVELOPMENT OF TOBACCO USE IN ADOLESCENCE AMONG ‘SNUS STARTERS’ AND ‘CIGARETTE STARTERS’. AN ANALYSIS OF THE SWEDISH ‘BROMS’ COHORT

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There are concerns that the use of smokeless tobacco can facilitate the transition to cigarette smoking and/or to prolonged tobacco use among youths. In Sweden there is a widespread use of snus, the Swedish moist oral snuff, especially among males. We analysed data from a regional cohort of 2938 adolescents of both sexes, who were followed up between the ages of 11 and 18 years. Initial tobacco use was defined as self-reported use of cigarettes and/or snus at any survey among adolescents who were lifetime non-users at the preceding survey. Among tobacco users whose product order could be determined 70% started by smoking cigarettes, 11% by using snus, and 19% by using snus and cigarettes during the same year. In a logistic regression analysis the odds ratio (OR) of being a current smoker at the end of follow-up was higher for cigarette starters (adjusted OR=1.47; CI=1.01-2.17) and for mixed starters (adjusted OR=2.56; CI=1.69-3.93) compared to snus starters. The risk of being a current user of either tobacco type was enhanced for mixed starters, but not for cigarette starters compared to snus starters. There were pronounced sex differences, as the risk of current smoking or tobacco use was not substantially different for cigarette starters compared to snus starters among males, whereas female cigarette starters had 80 and 100% increase in the risk of becoming current smokers or tobacco users respectively, compared to snus starters. Mixed starters had the highest excess relative risk in both sexes. The data did not support the hypothesis that type of tobacco at initiation predicts future established use among Swedish male adolescents. Females? snus initiation during adolescence is rare and identifies a group with low risk of future tobacco use. Experimenters with snus and cigarettes close in time may represent a group at high risk for transition to regular use in adolescence.

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POS2-32  PERCEPTIONS OF RELATIVE HARM ASSOCIATED WITH SNUS AND CIGARETTES AMONG SOUTH AFRICAN SMOKERS

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The use of snus is generally accepted to be far less harmful than cigarette smoking, though the role of snus in harm reduction strategies remains controversial. In May 2005, British American Tobacco South Africa initiated a test launch of snus in a limited number of outlets in Johannesburg, South Africa. Snus is unknown as a product in South Africa, and though there is a low level of use of oral tobacco the predominant form of tobacco use is cigarettes. The snus products were produced as well known cigarette brands, and a reasonable amount of press coverage carrying a message of harm reduction accompanied the launch. The products carried the mandated warning (Causes cancer), and communication materials throughout the year-long test focused on how to use the product rather than why. Verified adult smokers, both those who tried snus and those who refused to do so, were interviewed about their perceptions of the relative levels of harm caused by snus and cigarettes at three different times. At interview soon after the test launch 19% of trialists reported that they thought snus is more harmful than cigarettes, 38% thought snus equally harmful and only 10% though snus less harmful. 32% were unsure. The percentage of trialists who thought snus was equally or more harmful than cigarettes grew from 57% at first interview, to 63% at second interview and 68% at the time of the third interview. Of adult smokers who would not try snus, 63% thought snus to be equally or more harmful than cigarettes, rising to 79% at the time of third interview. The study suggests that, in the absence of clear communication on relative risks, adult smokers unfamiliar with snus are likely to see it as equally or more hazardous than cigarette smoking, despite the lack of smoke.

The study was funded by British American Tobacco, a tobacco company.

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POS2-33  WATERPIPE SMOKING AND NICOTINE EXPOSURE: A REVIEW AND META-ANALYSIS OF THE CURRENT EVIDENCE

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The waterpipe (WP), also known as shisha, hookah, narghile, goza, and hubble bubble, has long been used for tobacco consumption in the Middle East, India, and parts of Asia, and more recently has been introduced into the “smokeless” tobacco market in Western nations. We have reviewed the published literature on WP use for the purpose of estimating daily nicotine exposure among adult WP smokers. We identified six recent studies that measured the nicotine or cotinine levels associated with waterpipe smoking in four countries (Lebanon, Jordan, Kuwait, India). Four of these studies directly measured nicotine or cotinine levels in human subjects. The remaining two studies used smoking machines to measure nicotine yield in cigarette tobacco. Analyses were conducted on tobacco content, nicotine, total alkaloids, pH, total particulate matter, and other emission characteristics. The waterpipe's unique design and atypical tobacco blend may lead to altered health risks compared with other forms of tobacco use.

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POS2-34  WATERPIPE ASSOCIATED PARTICULATE MATTER EMISSIONS

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Waterpipe use has been witnessing alarming increase all over the world. Evidence are accumulating about the health hazards of this tobacco use method to the smoker, however we still don’t know about its potential harm through exposure to waterpipe associated second hand smoke. Particulate respirable matter (e.g. PM2.5) is used extensively as a surrogate marker of exposure to tobacco smoke, and has been linked to cardiopulmonary morbidity and mortality. In this pilot study we used a SidePak personal aerosol monitor to measure particulate matter (PM2.5, PM10) emission during waterpipe and cigarette single ad libitum session in a controlled lab environment. Ten regular waterpipe smokers and 10 daily cigarette smokers were recruited, five for each particle size and smoking method. Measurements were started 5 minutes before tobacco use and finished 5 minutes after its extinguish, during which the SidePack recorded minute by minute readings. Average background, smoking, and maximum levels were calculated and compared using a t test. In waterpipe, PM2.5 average changed from 126 µg/m3 pre smoking to 539 µg/m3 during smoking, while in cigarettes it changed from 117 µg/m3 to 865 µg/m3 (p<0.05 for both). PM10 average changed from 114 µg/m3 pre smoking to 859 µg/m3 during smoking in waterpipe, and from 146 µg/m3 to 1397 µg/m3 for cigarettes (p<0.05 for both). Maximum levels of PM reached 1968 µg/m3 for PM2.5, and 3582 µg/m3 for PM10 in waterpipe. Waterpipe use is associated with high levels of particulate matter emission that is comparable to cigarettes, signifying serious hazard to those exposed, and highlighting the importance of policy regulations to protect nonsmokers from this harmful exposure.

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POS2-35  TOBACCO WATERPIPE USE IN THE U.S.: CHARACTERISTICS OF RAW TOBACCO AND PROFILE OF COLLEGE-AGE USERS


Tobacco (hookah) waterpipes have experienced high levels of use in much of the greater Middle Eastern region. The waterpipe’s unique design and atypical tobacco blend may lead to altered health risks compared with other forms of tobacco use. Although concerns have been raised about increasing use in the US, little waterpipe research has been performed in the US. Data from two investigations are presented. The first investigation describes the composition of mo’assel waterpipe tobacco from U.S. and other commercial markets. Raw product analyses were performed on 23 mo’assel brands obtained from commercial sources in the U.S., Jordan and Israel. Analyses were conducted on tobacco content, nicotine, total alkaloids, pH, total reducing sugars, humectants tobacco specific nitroamines and trace metals. Raw cigarette tobacco yields were used as controls. The second investigation profiles an online survey of 398 US college-age subjects, conducted in May-June, 2006. Waterpipe use in the past 2 years was reported by 153 (38%), and the final sample comprised 137 waterpipe users (62% female; mean age=20.8 years, SD=1.6). Most (80%) had their first waterpipe experience in the U.S. Most of the sample (89%) had used a waterpipe on multiple occasions, and 54% reported a lifetime waterpipe use of 2 to 15 times. About half the sample (42%) had used a waterpipe in the past 30 days, with 19% reporting use in the past 7 days. Most participants (92%) smoked monthly or less and 88% of the sample were self-described “light smokers,” with a smaller proportion (11%) describing their use as “medium.” The data suggest that waterpipe use among young people in the US is high, but quantity and frequency of use is low. However, availability of domestic and imported mo’assel tobacco and its high popularity could give rise to enhanced use in the US, raising serious public health concerns.

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POS2-36

AVAILABILITY AND CHARACTERISTICS OF BETEL NUT PRODUCTS IN THE U.S.

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A popular practice throughout Asia is the use of various forms of betel nut. Traditionally, this practice involves chewing shards of areca nut (seed of Areca catechu palm containing the cholineric agonist arecoline) wrapped together with slaked lime in a betel vine leaf (Piper betle plant). Additives to this mixture often include catechu (areca palm extract), spices and sweeteners (e.g., saccharin, cloves, cardamon), and/or tobacco. Convenient and imperishable betel nut preparations have been manufactured and distributed around the world, including the U.S. However, little is known about the availability and characteristics of these products. To address these issues, a representative sample of betel nut products and their additives was purchased from locations in the greater Richmond, Virginia area. Five out of seven total possible venues were visited during the period of March-May 2006. Products successfully purchased were those which included betel nut alone (7), betel nut plus tobacco (3), tobacco alone (4), and sweeteners/additives (4). Most products listed ingredients on the packaging, though several did not explicitly identify those containing betel with versus without tobacco. For example, a common betel nut mixture with tobacco is known as gutcha, while the same mixture without tobacco is known as paan-masala. Many Asian tobacco companies manufacture both product types with the same brand name and packaging, possibly making them distinguishable only to those familiar with the native terms. Importantly, the large majority of betel products did not provide any health-related warnings on the packaging: 77 betel-alone and 1/3 betel plus tobacco. Four of the betel-alone products, however, did warn of inclusion of artificial sweetener. All products were very inexpensive and were relatively obtainable in all of the East Asian groceries visited. More research is warranted on these products in order to accurately estimate their emergence into the U.S. and the consequent impact on public health.

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POS2-37

PHYSICAL AND CHEMICAL ANALYSIS OF IQ'MIK

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Iq’mik is a tobacco preparation popular among some Alaskan natives living in the in southwestern Alaska. This smokeless tobacco product is made locally by mixing ash from either punk fungus or willow bush with air-cured or fire-cured chewing tobacco. The addition of ash increases the alkalinity of the tobacco mixture well above pH 10 resulting in nearly all of the nicotine being converted to the more bioavailable-free-base form. We found that levels of total nicotine and free nicotine in iqmik were substantially higher than in most commercial smokeless products. The levels of the carcinogenic tobacco specific nitrosamines (TSNAs); N-nitrosornicotine (NNN), and 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanoate (NNK) were high, but within the range of comparable commercial smokeless products. Interestingly, levels of several polyacrylic aromatic hydrocarbons were much higher in the fire-cured leaf than in the air-cured leaf used in iqmik. Normally, PAs are associated with combustible tobacco products and are formed through a series of pyrolysis reactions. However, PAH levels in the fire-cured iqmik leaf approaches that observed for Kentucky Research 2R4F cigarette smoked under standard machine smoking conditions. On a per dose basis, assuming 1 dose of iqmik is 0.25g, a fire-cured iqmik preparation delivers twice the benz[a]pyrene than the mainstream delivery of a single 2R4F cigarette smoked using the ISO smoking regimen. These results suggest that further chemical screening and evaluation is needed to more fully assess potentially toxic constituents in oral tobacco preparations.

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POS2-38

POLICIES TO REDUCE TOBACCO HARM: HOW DO WE REALLY KNOW WHAT WORKS?

K. Michael Cummings, Ph.D., M.P.H.*, Roswell Park Cancer Institute, Buffalo, NY (USA), on behalf of the ITC Research Collaboration

This poster describes the International Tobacco Control (ITC) Policy Evaluation study and provides highlights from studies conducted to date. The ITC study utilizes multiple country controls, a longitudinal design, and a pre-specified, theory-driven conceptual model to test hypotheses about the anticipated effects of the demand reducing policies of the Framework Convention on Tobacco Control (FCTC) among (primarily) adult smokers. The rationale for the study and study design are outlined along with highlights from ITC evaluations on product warnings, ad ban, taxation, smoke free policies, and tobacco product regulations. ITC studies completed to date reveal the following: 1) product warning labels are an important source of information for smokers and strengthening labels so that they are larger and more graphic is well justified; 2) smoke free policies are readily accepted and compiled with, and appear to help smokers quit; 4) the European Commissions (EC) 2003 tobacco product advertising ban reduced smokers’ exposure to cigarette advertising on billboards/posters, in print media, and in sports events as intended; 5) higher cigarette taxes impact the behavior of smokers in complex ways such as quitting and reducing smoking, switching to lower cost cigarettes (including roll-your-own), and encouraging the use of less costly tobacco outlets; 5) the EC’s 10-1-10 product regulation has failed to alter smokers exposure to smoke toxins. As tobacco control policies are formulated and implemented, it is important that they undergo rigorous evaluation since the effects are not always as predicted.

The ITC project is supported by grants R01 CA 100362 and P50 CA111236 (Roswell Park Transdisciplinary Tobacco Use Research Center) from the National Cancer Institute of the United States, Robert Wood Johnson Foundation (045734), Canadian Institutes of Health Research (57897), National Health and Medical Research Council of Australia (265903), Cancer Research UK (C312/A3726), Canadian Tobacco Control Research Initiative (014578), Centre for Behavioural Research and Program Evaluation, National Cancer Institute of Canada/Canadian Cancer Society.

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POS2-39

IMPACT OF CORRECTIVE HEALTH INFORMATION ON CONSUMERS’ PERCEPTIONS OF POTENTIALLY LESS HARMFUL TOBACCO PRODUCTS

Lois Biener, Ph.D.*, and Karen Bogen, Ph.D., Center for Survey Research University of Massachusetts Boston and Gregory N. Connolly, D.M.D., M.P.H., Division of Public Health Practice, Harvard School of Public Health

This study examined consumers’ responses to print advertising for PREPs to determine whether providing additional information outlining the bases for uncertainty about these products would temper the tendency to accept the implied message that PREPs are less harmful than ordinary cigarettes. A sample of 177 smokers were randomly assigned to one of four conditions in which they briefly viewed actual advertising material for two different PREPs, Eclipse and Advance. The ad for one brand included a “health information box” which explained in brief why the products might not really reduce exposure to toxins, and why even if some toxins were reduced, the products might not reduce risk of disease. The order in which the two brands were viewed and the presence of the health information box were counterbalanced. The outcome variables were perceptions of toxin reduction and health risk reduction. Results demonstrated that the health information box had a small but statistically significant effect on perceptions of disease risk. The product containing the health information box was perceived as significantly more risky than the one without, but perception of toxin reduction was not changed by the health information box. Although the information presented in the box was general and could apply to each product, it appeared to reduce risk perceptions. A more intensive consumer education campaign can be expected to have a larger, and potentially more lasting impact.

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POS2-40  EFFECT OF ADVERTISEMENT MANIPULATIONS ON SMOKERS FALSE INFERENCES ABOUT QUEST CIGARETTES

Andrew A. Strasser*, Kathy Z. Tang, Michael D. Tuller, Joseph N. Cappella, William Shadel, Caryn Lerman; Transdisciplinary Tobacco Use Research Center, University of Pennsylvania

Smokers perceptions and expectations about cigarette products are often influenced by product marketing, including package color, advertising images, and wording, such as light and low tar labels. Quest cigarettes are marketed as a way for smokers to gradually reduce their cigarette nicotine level and become nicotine-free. Yet, tar levels remain constant across nicotine levels. In a previous study, smokers low in need for cognition, high in perceived vulnerability to the harmful effects of smoking, and with low education, made relatively more false inferences about Quest cigarettes when viewing the advertisement. The current study used digitally edited advertisements to examine the components of the advertisement, which contribute to making false inferences. Five hundred current smokers were randomized to one of three advertisement treatments: all text removed; original, unaltered advertisement; or re-edited advertisement packages. Participants answered demographic and smoking items then viewed one of three advertisements. Participants were then asked items related to the nicotine and tar level, addictiveness, likeness to cause cancer, safety, and the ability to help quit smoking, of Quest cigarettes. Groups did not significantly differ by descriptive measures. The text advertisement group were significantly less likely to report that Quest cigarettes contained less nicotine than regular cigarettes (36% vs. 40% (original) and 47% (revised advertisement pack), which is incorrect. However, the no text advertisement group was significantly less likely to incorrectly believe that Quest cigarettes were: lower in tar (11% vs. 20%), less addictive (12% vs. 20%), less likely to cause cancer (6% vs. 12%), and making smoking safer (7% vs. 18%). Further, participants who report likely trying to quit smoking in the next 3 months made more false inferences about the harm reduction benefits of Quest cigarettes than those not interested in quitting. Differences in false perceptions by advertisement treatment will be presented in the context of explicit (i.e., stated nicotine levels) and implicit message features of this potentially harm reducing product.

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POS2-41  EVALUATION OF AN INTERVENTION TO EDUCATE SMOKERS ABOUT THEIR CIGARETTES AND NICOTINE MEDICATIONS

Maansi B. Travers, Ph.D.*, K. Michael Cummings, Ph.D., Paula Celestino, Andrew Hyland, Ph.D., Anthony Brown, Roswell Park Cancer Institute, Buffalo, NY

Background: Recent studies have found that many smokers are misinformed about low tar cigarettes and the safety and efficacy of nicotine medications.

Objectives: To test the efficacy of an intervention designed specifically to educate smokers about their cigarettes and the safety and efficacy of nicotine medications.

Methods: A randomized trial was conducted with 682 adult smokers who called the New York State Smokers’ Quitline. The control group was sent the Quitline’s standard smoking guide plus a free supply of nicotine patches plus a specially designed quit packet that looked like an oversized pack of cigarettes. The intervention materials also contained illustrations on how their cigarettes are designed, ingredients in cigarettes, and information on the safety and efficacy of nicotine medications. Participants were called back one month later to assess their recall of the materials sent to them, their beliefs about cigarette characteristics, and tobacco use status.

Results: Subjects in the experimental group were better able to recall and more likely to report using and sharing the quit materials compared to subjects in the control group. Compared to those in the control group, experimental group subjects were more likely to be knowledgeable about cigarette ingredients and other design features such as low tar; differences between experimental groups for specific items were significant at the p<0.05 level. There was no difference in quit attempt, use of nicotine medications, or cessation rates between subjects in the experimental and control conditions. Participants were more engaged in the materials were more likely to have changed smoking behavior and report smoking not at all at time of follow-up.

Conclusions: The specially tailored quit packet was better recalled and may have contributed to slightly higher levels of knowledge about cigarette design features, but this did not translate into greater likelihood of quitting or quit success.

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POS2-42  EVALUATING THE ACUTE EFFECTS OF POTENTIAL REDUCED EXPOSURE PRODUCTS FOR SMOKELESS TOBACCO USERS: A PRELIMINARY REPORT

Jennifer Gray, B.S.*, Cynthia Sams, R.N., and Thomas Eissenberg, Ph.D., Virginia Commonwealth University

There are several potential reduced exposure products (PREPs) marketed for smokeless tobacco (SLT) users. For example, Star Scientific markets Stonewall™, a tablet made from compressed tobacco that is said to reduce SLT users’ exposure to tobacco-specific nitroamine. Also, Swedish Match markets SLT products, collectively called “snus”, that are said to reduce or eliminate alleged harmful compo- nents of smokeless tobacco. This study assessed EMA and withdrawal effects of this face product for SLT users. Nine overnight-abstinent SLT users (1 woman) completed four, 4.5-hour sessions that differed by SLT product used: Stonewall™, a snus brand called General, own brand, or placebo (BAC-OFF, a nicotine-free, non-tobacco product marketed to SLT users). Each session consisted of four, 30-minute bouts where the SLT product was used, with each bout separated by 30 minutes. Blood was sampled, heart rate measured, and withdrawal symptoms assessed before and after each bout. Plasma nicotine levels and heart rate increased significantly, relative to placebo, for General and own brand. Withdrawal effects did not differ by condition. This preliminary report supports the use of clinical laboratory methods for evaluating the nicotine exposure, cardiovascular effects, and withdrawal suppression of PREPs for SLT users. Supported by PHS Grant R01CA103827.

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POS2-43  PREVALENCE DATA FOR PREP POPULARITY AND USAGE—FIRST FINDINGS AND METHODOLOGICAL ISSUES

Jens Frederic Malter, M.S.*

The concept and strategies of harm reduction are vigorously debated in the tobacco control community, but they represent an opening for the tobacco industry for future profits. Extensive research and marketing efforts by the industry can be expected to continue. While the tobacco control community frets over the feasibility and desirability of harm reduction, a host of potential reduced-exposure products (PREPs) — such as false cigarettes, nicotine lozenges etc. — are being made abundantly available to smokers. Most published studies about PREPs focus on smokers’ assessments and perceptions of these products, but do not use methodologies that would provide estimates of prevalence of use for a population. This paper is a modest contribution toward filling a gap in our knowledge about the popularity and use of PREPs. The presentation makes use of data from a state-wide surveillance system in trying to assess prevalence data on PREPs. The 2005 Arizona Adult Tobacco Survey—an RDD telephone survey—asked current smokers about their knowledge and usage of new tobacco products. Results allow for some initial estimates of popularity of these products among smokers (relatively high), actual use (fairly low) and for a description of the demographic background of PREP users. Findings suggest that users of PREPs tend to live in a social environment less accepting of smoking, in which PREPs may serve as a means to “bridge” non-smoking situations and thereby may interfere with impulsive and addictive conduct to quitting. The paper puts a special emphasis on methodological considerations for obtaining prevalence measures from an RDD methodology and on potential policy implications of the findings.

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POS2-44  DEPENDENCE ON NICOTINE GUMS

Jean-Francois Etter, University of Geneva, Switzerland

Aims: To describe patterns of utilization and dependence in nicotine gums users. Design and Participants: Internet survey in 2004-2006 in 449 current users of nicotine gums. A subsample (n=116, 26%) indicated 30 days later whether they still used nicotine gums. Measurements. To assess dependence on nicotine gums, we used modified versions of the Nicotine Dependence Syndrome Scale (NDSS), the Cigarette Dependence Scale (CDS) and the Fagerström test.

Findings: Most participants (58%) had been using nicotine gums for >3 months, (i.e. for longer than usually recommended.) Most (76%) long-term (>3 months) users agreed with: “I use nicotine gums because I am addicted to them”, with: “I am a prisoner of nicotine gums” (82%) and with: “I am unable to stop using nicotine gums” (69%). Long-term users used a median of 10 gums per day and most (53%) reported an “extremely strong” urge to use nicotine gums after their last attempt to stop using them. Abstinence from gum use after 30 days was predicted by baseline NDSS-gum ratings (odds ratio=2.15 per standard deviation unit, p=0.035) and by CDS-gum ratings (odds ratio=2.21, p=0.043). Addicted gum users had used a median of 10,950 gums per person in total, and they had used 94% of all the nicotine gums used by the whole sample.

Conclusions: Many participants were addicted to nicotine gums and used considerable amounts of gums over extended periods of time. Addicted users may buy a substantial part of all the nicotine gums sold. Long-term use of nicotine gums is however not known to be harmful.

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POS2-45  POST-INTERVENTION EFFECT OF NICOTINE REPLACEMENT THERAPY FOR SMOKING REDUCTION: A RANDOMIZED TRIAL WITH 5 YEAR FOLLOWUP

Jean-Francois Etter, Evelyne Laszlo, University of Geneva, Switzerland

We tested whether a reduction of cigarette consumption obtained after 6 months of nicotine replacement therapy was maintained 5 years after the end of this treatment. Heavy smokers (mean=30 cigarettes/day) who had no intention of quitting smoking were randomly assigned to either a 6-month treatment of nicotine (15 mg patch, 4 mg gum and/or 10 mg inhaler, n=265), placebo (n=269) or no intervention (n=389). Products were sent by mail and education was limited to a booklet. Of 923 participants, 879 (95%) were followed after 6 months and 671 (73%) after 5 years. After 6 months, smoking reduction was larger for nicotine (-10.9 cigarettes/day) than for placebo (-8.7) and no treatment (-4.9, all p<0.022). After 5 years, cigarette consumption (20 cigarettes/day, all p<0.02) and smoking cessation rates (17 to 21%, all p<0.02) were similar in all groups. In smokers at 6-month follow-up, 5 years continuous abstinence was higher in those who had reduced their cigarette consumption by >=50% between baseline and 6 months than in those who did not reduce (11.9% vs 5.6%, p=0.011; odds ratio=2.3, 95% confidence interval: 1.2 to 4.2). Thus the initial effect of the treatment on smoking reduction was not maintained after 5 years. However, reducing cigarette consumption was associated with a higher chance of subsequently quitting smoking. NRT in unmotivated smokers had no deleterious effect on dependence levels and smoking behavior.

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POS2-46  USING PHARMACOTHERAPY TO DELAY OR AVOID WEIGHT GAIN AFTER SMOKING CESSION

Nancy Rigotti, M.D., Massachusetts General Hospital

Most smokers who quit smoking gain weight, usually 6-12 lb in the year after they stop smoking, but 10%-15% of quitters gain more. Concern about weight gain is a commonly cited barrier to cessation. Smokers concerned about weight are more likely to relapse and may be less likely to try to stop smoking in the first place. Pharmacotherapy could help by preventing or reducing total post-cessation weight gain or, perhaps, by delaying the onset of weight gain until after cessation has been attained. An ideal drug would have efficacy for both smoking cessation and prevention of post-cessation weight gain, but a drug that reduced post-cessation weight gain alone might still have benefit. This presentation will provide evidence about the role of pharmacologic interventions (both currently available and in development) to address weight gain after smoking cessation, also temporarily reduces post-cessation weight gain; in one study, weight attenuation persisted for one year after prolonged treatment with bupropion. Rimonabant, a selective cannabinoid-type 1 receptor blocker, reduces body weight and has been investigated for smoking cessation efficacy. In one randomized controlled trial, rimonabant significantly reduced post-cessation weight gain among subjects who quit smoking with the drug. Most existing data do not specifically address the impact of a drug on the subset of weight-concerned smokers, for whom actual or threatened weight gain may be most important.

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POS2-47  A PERSONALITY PROFILE OF THE APPETITE-WEIGHT CONTROL SMOKER

James C. Tate, Ph.D.*, and Bryan Thomas, B.S.; Middle Tennessee State University

One-hundred and fifty-eight cigarette smokers (90 women, 68 men; mean age=24.91 yrs; mean smoking rate=19.52 cigarettes/ay; mean years of smoking=8.69; mean expired CO=24.42 ppm) completed a battery of measures including demographics form, appetite-weight control smoking scale (awcs), Spielberger trait anxiety scale (trait), centers for epidemiological studies-depression scale (ces-d), perceived stress scale (pss), and the NEO-PI-R personality inventory. AWCS scores were significantly positively correlated with trait, ces-d, and pss scores, indicating that those who smoke cigarettes in order to control appetite and weight tend to manifest more anxiety, depressed mood and stress than those who do not smoke for these reasons. AWCS scores were significantly positively correlated with the following NEO-PI-R facet scales of the Neuroticism domain: anxiety, depression, impulsiveness, and vulnerability. AWCS scores were significantly negatively correlated with the following NEO-PI-R facet scales of the Conscientiousness domain: competence, order, self-discipline, and deliberation. Results suggest that in addition to concerns over post-cessation weight gain, appetite-weight control smokers may manifest certain mood and personality characteristics that might further hinder smoking cessation efforts. Although further research is needed, appetite-weight control smokers attempting cessation may benefit from programs that address these mood and personality characteristics. Implications for treatment are discussed.

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SMOKE AND MIRRORS: MAGNIFIED BELIEFS THAT CIGARETTE SMOKING SUPPRESSES WEIGHT

Marny A. White*, Sherry A. McKee, Stephanie S. O'Malley, Yale University School of Medicine

Research suggests that for some smokers, weight concerns interfere with smoking cessation. Studies with individuals with eating disorders and weight concerns have indicated that weight preoccupied individuals place undue faith in the effectiveness of certain weight control strategies; i.e., adopt a brand of magical thinking pertaining to food rules and dieting behaviors. The current study investigated whether weight preoccupied smokers endorsed exaggerated beliefs in the ability of smoking to suppress body weight. Participants were 355 individuals undergoing treatment for smoking cessation. Prior to treatment, participants completed the Smoking Consequences Questionnaire—Adult (SCQ-A) and the Dieting and Bingeing Severity Scale. Results indicated that heightened beliefs in the effectiveness of smoking to control weight were related to weight concerns; specifically, strong associations were observed between SCQ-A Weight Control scores and fear of weight gain (r=0.47, p<0.01), loss of control over eating (r=0.34, p<0.01), and body dissatisfaction (r=0.28, p<0.01). Although SCQ-A Weight Control scores were related to (self-reported) weight gain during a previous quit attempt, scores did not predict actual weight gain over the course of the cessation trial. Reported weight gain at previous attempts was also unrelated to actual weight gain over the current trial. These findings indicate that weight preoccupied smokers may benefit from psychoeducation concerning the relatively modest and temporary ability of nicotine to suppress weight.

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SEX DIFFERENCES IN NUTRIENT INTAKE AND DEPRESSION DURING A SMOKING CESSATION TRIAL WITH HIGH-DOSE TRANSDERMAL NICOTINE

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While weight gain is common during smoking cessation, research is lacking on the dietary and psychological changes that might contribute to this phenomenon. To explore this, we compared Baseline and Week 6 data on weight, nutrient intake, and depression for participants enrolled in the preliminary 6-week high-dose (21mg) nicotine patch phase of a smoking cessation trial (prior to randomization; Pomerleau OF et al., 2003). A history of depression as a withdrawal symptom was required for participation in the trial. Only individuals with dietary recall data at Baseline and Week 6 were included in our analyses. Our sample (N=57) was 58% female with a mean age of 40.4 years and mean FTND score of 6.3. At baseline, there were sex differences in caloric intake and weight (men>women). Strong concerns about weight gain during cessation were endorsed by 51.5% of women and 12.5% of men (P<0.01). Weight increased over time, but not as a function of sex. There were marginal baseline differences in daily percentage of calories from alcohol (p=0.09) and protein (p=0.06), and none in percent from carbohydrates or fat. Change scores were calculated for differences in nutrient intake from baseline to Week 6. Change in fat intake was significant (p=0.04), with men increasing and women decreasing fat intake during cessation. With respect to depression, men had significantly lower scores at baseline (CES-D mean of 9.6 for men and 15.4 for women, p<0.05). Depression changed significantly as a function of sex, with men’s mood improving over time while women’s mood worsened. Changes in nutrient intake, however, did not differ by depression or abstinence status. There were no significant differences in dietary intake or depression as a function of cessation-related weight concerns at baseline. Results suggest that men and women differ in the dietary modifications they make upon quitting. The impact of these factors on weight gain and treatment outcome and their possible association with treatment-emergent depression in women warrant further research.

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PHYSICAL ACTIVITY AND SMOKING RELAPSE IN WOMEN SMOKERS

Tracy Bade, M.P.H.*; Sharon Allen, M.D., Ph.D., University of Minnesota, Tobacco Use Research Center

Physical activity has been shown to positively affect factors that may protect against smoking relapse, including coping ability and self-esteem. It has also been shown to control weight, as well as reduce many of the variables negatively affected by nicotine withdrawal. There is a need to study the relationship between physical activity and smoking cessation in women, who as compared to men, report more fear of post cessation weight-gain as a motivation for continued smoking and for smoking relapse. Women smokers ages 18-40 (n=190) were recruited for a three-month study where they were given behavioral counseling and assigned a quit day. Physical activity was assessed using the Stanford Physical Activity form at baseline and during the first month post-quit. On average, at baseline, women were 30 (± 7) years old, had an average weight of 155 (± 42) pounds, had a weekly average of physical activity (hard and very hard) of 26 (± 21) hours, smoked an average of 17 (± 6) cigarettes per day, with an average FTQ score of 4.1 (± 2.0). Baseline levels of activity (hard and very hard) were significantly correlated with desire to smoke (r=-1.89, p=0.004) and a trend to being correlated with days to relapse (r=-1.24, p=0.085). Baseline level of very hard activity was correlated with cigarettes per day (r=0.14, p=0.005), age (r=-1.77, p=0.007), and years of education (r=1.73, p=0.008). Hours of sleep at baseline were correlated with days to relapse (r=1.93, p=0.008). Ninety-eight women quit for at least 24 hours and 92 women quit less than 24 hours. Women who quit for at least 24 hours had significantly increased weight from baseline to 3 days post-quit (p=0.000). During the first week after quit, women who quit for at least 24 hours also had decreased levels of physical activity compared with baseline levels (p=0.058). Results support past research, which has shown that many women gain weight when attempting to quit smoking. Results also confirm past research, which has shown that physical activity can reduce urge to smoke. Further research is needed to study physical activity as a treatment method for smoking cessation.

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POST-MSA EXPOSURE OF YOUTH TO MAGAZINE ADVERTISING FOR TOBACCO PRODUCTS


Objective: The present study examines exposure to magazine advertising for tobacco products of teens relative to the general population and evaluates the evidence concerning youth targeting.

Methods: National advertising placement and expenditures data, consisting of 24,512 tobacco products advertisements were combined with survey-based estimates of teen and general population publication audience data over the years 1998-2004. A Youth Index (YI) based on the accrued readership of the publications in which tobacco advertising appears was computed to assess the exposure of youth relative to the exposure of all persons aged 12 years and older. YI exceeding 100 for any manufacturer, product type, or brand, indicates that the advertising placement schedule exposes youth disproportionately compared to the general population.

Results: YI for each of the four major manufacturers was greater than 100 in each of the years immediately following the MSA (1998-2000) and reached as high as 164 and 153 for two of the manufacturers. YI for the brands preferred more by youth was higher than 100 from 1998 through 2001 for Newport and Camel and through 2000 for Marlboro, and was greater than 100 for Camel in 2004. YI for mentholated cigarette advertisements averaged 120 in the years 1998 to 2004. YI for flavored cigarettes was 104 and 107 respectively in the two years since tobacco companies began advertising these products. YI was higher than 100 for every smokeless tobacco product brand advertised in each year between 1998 and 2002, except for one brand in one year. Since 2002, the youth exposure index for smokeless tobacco products has dropped to levels below 100. YI for cigar advertising was also consistently high.

Conclusions: Evidence is provided for youth targeting in the post-MSA period through disproportionate exposure to magazine advertising for tobacco products, particularly for the brands and varieties most popular among youth. Disproportionate exposure of youth relative to the general population lessened but did not disappear over the study period.

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POS2-52

A MESSAGE MAKEOVER: AN EVALUATION OF FRAMED SMOKING CESSATION VIDEOS FOR ADOLESCENTS

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Research suggests that among adult smokers messages emphasizing the benefits of smoking cessation (gain-framed) may be more persuasive than messages emphasizing the risks of continued smoking (loss-framed). Whether this message-framing principle applies to adolescent smokers is untested, yet worthy of investigation given that a majority of adolescent smoking cessation messages are loss-framed. The objective of this pilot study was to evaluate adolescents’ sensitivity to and acceptance of gain- and loss-framed smoking cessation videos. Thirty-three adolescent smokers (Mage=16.97±1.33; 73% male) recruited from local CT high schools viewed two factually equivalent framed smoking cessation videos presented in random order. The content of the videos was developed by our group based on a survey of adolescents’ smoking information preferences. After viewing each video, participants’ thoughts about and evaluations of the video were assessed. First impressions of the videos were examined in between-groups comparison of participants’ ratings of the final video they were able to watch. The videos were considered equally convincing and appealing, p>.05. However, the loss-framed video elicited more negative smoking-related thoughts, F(1, 31)=6.46, p=.02, and was judged as having a more negative storyline than the gain-framed video, F(1, 31)=41.42, p<.001. The overall purpose of the videos was perceived as similar, p>.05; nonetheless, the gain-framed video was rated as containing more new information than the loss-framed video, F(1, 31)=6.02, p=.02. A within-groups comparison of participants’ video ratings was conducted to further examine sensitivity to message frame. The loss-framed video was judged as having a more negative tone and storyline than the gain-framed video, p<.05. Although both videos were considered convincing and appealing p>.05, the majority of participants preferred the gain-framed version, Chi-Square(1, n=31)=4.01, p>.05. These findings suggest that adolescents are able to differentiate gain- versus loss-framed messages. Furthermore, gain-framed messages may be a novel and appealing approach to convey smoking cessation information to adolescents.

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POS2-53

SPENDING MONEY IS ASSOCIATED WITH EXPERIMENTAL AND CURRENT SMOKING AMONG ADOLESCENTS

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Many studies have investigated macro-level economic determinants of adolescent smoking behavior, but few have looked at the impact of economic factors at the individual level. In this study, micro-data (n=3,152) from the 2003 Ontario Student Drug Use Survey were used to investigate the association between spending money and smoking behavior among Ontario students in grades 7 to 12. The prevalence was 3%, 6%, 7%, 13%, and 14% for current smoking and 23%, 29%, 34%, 34%, and 40% for experimental smoking among students with weekly spending money of <$10, $10-$19, $20-$29, $30-$59 and $60+, respectively. Multivariable Poisson regression analysis showed that spending money was significantly associated with smoking. Comparing students who received <$10/week with those who received $10-$19, $20-$29, $30-$59, and $60+ per week, the adjusted prevalence rate ratios (95% confidence intervals) were 1.43 (0.81-2.51), 1.53 (0.90-2.51), 2.08 (1.20-3.60), and 2.08 (1.20-3.60), and 1.84 (1.06-3.20) for current smoking, and 1.22 (0.93-1.58), 1.28 (1.02-1.60), 1.28 (0.99-1.65), and 1.32 (1.05-1.66) for experimental smoking, respectively. Limiting spending money to adolescents may protect against initiation and continuation of cigarette smoking. Parental rules in reducing and preventing adolescent smoking should be included in programs aimed at parents. Such individual-level strategies complement broader based transition strategies that are known to decrease consumption and prevalence of smoking in adolescents.

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POS2-54

ADOLESCENTS WHO WANT TO SMOKE, BUT CAN’T: SITUATIONAL AND MOOD CONTEXTS

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This study examined teen smokers’ “real time” reports of situations in which they wanted to smoke, but couldn’t. These situations may provide insights into the development of dependence and withdrawal symptoms among adolescents. Participants were 461 9th and 10th graders (55% female; 57% white) who event-recorded, via hand-held PDAs, 3 types of events: (1) smoking; (2) decisions not to smoke, when the teens had the opportunity to do so; and (3) times when they wanted to smoke but couldn’t. Additionally, participants responded to “random prompts” on the PDAs over a 7-day period. Participants all had some lifetime smoking experience. 208 participants provided 692 “could not smoke” events during the week, of which 45% occurred while in school and 30% when the adolescent was home. Of these events, 26% occurred while the adolescent was alone, 45% with others, and 29% when alone, but with others nearby; 16% of the events occurred with other smokers. We hypothesized that moods during “can’t smoke” times would be significantly worse than moods at either smoking or random times. Random effects regression analyses compared moods during each of the event types. “Can’t smoke” times were characterized by significantly higher negative mood, lower positive mood, higher feelings of social isolation, and higher feelings of being tired/bored than either random or smoking times. They were also significantly worse moods on each dimension than times when the adolescent had the opportunity to smoke, but decided not to smoke. These results suggest that urges/desires to smoke among adolescents may well occur at times when moods are more negative, but also, that the experience of not being able to smoke has a deleterious effect on mood, and may be early indicators of withdrawal symptoms.

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POS2-55

THE CO-OCCURRENCE OF SMOKING AND MARIJUANA USE FROM ADOLESCENCE TO YOUNG ADULTHOOD

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The present study sought to empirically identify distinct trajectories comprising both cigarette and marijuana smoking from adolescence (age 14 years) to young adulthood (age 20). We hypothesized that there would be several smoking-marijuana use trajectories and that these trajectories would vary with respect to use onset, frequency, and rate of escalation. We also sought to characterize these trajectories with behavioral, social, and psychological covariates. Participants were 998 individuals who comprise a prospective cohort study of the bio-behavioral predictors of smoking adoption. Survey data were collected annually from grade 9 to one-year post high school graduation. Self-report measures included smoking, marijuana use, race, gender, novelty-seeking personality, depression symptoms, academic performance, peer smoking, alcohol use, physical activity, team sport participation, and club involvement. Six distinct smoking-marijuana use trajectories were identified empirically through a Sequential Process Growth Mixture Model. These trajectories included: Regular Users, Late Escalators, Slow Escalators, Fast Escalators, Cigarettes Only, and Abstainers. Covariates significantly discriminated among these trajectories or subgroups. These results may contribute to a better understanding of the co-occurrence of smoking and marijuana use during adolescence and the transition to young adulthood, highlight points in time where certain subgroups are especially vulnerable to onset and progression of smoking or marijuana use or both (e.g., mid adolescence, late adolescence, transition out of high school), and therefore in need of smoking and/or marijuana use prevention or cessation programs.

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The longitudinal impact of changes in the smoking status of children's friendship networks on smoking uptake in early adolescence

Cassandra Stanton, Ph.D.*, Alessandra Kazura, M.D., Julie Boergers, Ph.D., Raymond Niaura, Ph.D., Brown Medical School

Peer influences have been identified as a risk factor for smoking uptake based on robust associations between adolescent and friend smoking. This study seeks to identify peer group homogeneity in early stage use of cigarette smoking, as well as examine longitudinally the impact of changes in the smoking status of early adolescents' friendship networks on smoking uptake over a two-year time frame. An ethnically and economically diverse sample (N=127; 24% White, 18% Black, 39% Hispanic; modal household income=$15,000-24,999) of preadolescents (age 8-13 y/o) presenting to an urban pediatric primary care clinic for a tobacco prevention study completed interviews at baseline and 24 month follow-up. There was no association between intervention condition and the outcome variables presented. Respondents provided initials, demographics, and smoking status of their 5 closest friends at each interview. The proportion of friends who had ever smoked was calculated based on the number of friends nominated. The Smoking Uptake Continuum was modified to provide a 5-point composite scale of smoking uptake based on biochemically verified smoking behavior and cognitions regarding smoking susceptibility. Paired t-tests indicated a significant difference (p<.01) between the mean proportion of smokers in the friendship group at baseline (12%) versus 24-month (17%). The proportion of smokers in the friendship group and smoking uptake were correlated at both time points (baseline r=.29, p<.05; 24-month r=.54, p<.001). Hierarchical regression analyses indicated that after controlling for child age (p<.01), gender (ns), race (ns), and baseline smoking uptake (p<.01), an increase in the proportion of smokers in the child's friendship group significantly predicted an increased risk of smoking uptake at 24-month follow-up, F-change (1,121)=6.96, p<.01. Thus, children were more likely to be at higher stages of smoking after a two year period as the proportion of friends who smoke in their network increased over time. Results suggest that early prevention programs that are directed to the risk-levels of peer groups may better take into account contextual influences on smoking uptake.

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Smoking problems in Greek adolescents

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Background/Aim: In spite of the intensive anti-smoking expedition of the last years, the problem of smoking in the Greek population and more specifically in the adolescents remains intense. We evaluated the size of the problem in high school students and their parents.

Methods: We addressed 640 students (age: 11-15 years, mean: 12.8) of 5 high schools. They answered an anonymous questionnaire concerned in the smoking habits of students and their parents, in the awareness of parents that their children smoke and, finally, in the knowledge of smoking consequences. Statistics: chi square test.

Results: Smoking students (SS): 224 (35%), especially boys (p<0.001). From them on a daily bases smoke 71 (DSS), while occasionally 153 (OSS). From non smokers (NS): 99 (23.8%) appear that they have tried cigarette once. 80.1% from OSS reports that they do not inhale the tobacco. 190 SS report that other members of their family also smoke, while 22 report that they smoke in their house. The other 90.2% of the SS smoke outdoors (in school, too). 76.1% of the parents smoke. Remarkable supremacy of smoking parents for the SS was noticed (p<0.0001). 82.6% of parents do not know that their children smoke. From the remaining 39 parents, 11 (28.2%) report that they allow their children to smoke in front of them. All the students and all the parents declare that they know the consequences of smoking. They all report lung cancer and death as their first choices. However, an important percentage focuses in “ornamental” consequences (i.e.: yellow colour of teeth, stench of breathing and clothes), while other important consequences are mentioned with very low percentages: COPD symptoms: 32%, reduction of sexuality—fertility: 20%, reduction of body growth: 12%, wrinkles: 8%, reduction of taste: 3%.

Conclusions: It is evident that an important percentage of young students smoke, following their parents’ pattern, despite the restrictions on behalf of the parents. The level of briefing of adolescents and adults regarding the dangers of smoking is low. Health Education is essential in the schools in order to improve the education of families for the prevention of smoking.

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The association between tobacco industry beliefs and youth smoking behaviour

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Youth smoking prevention is essential for reducing the current and future burden of death and disease caused by smoking in Canada. A prevention strategy that has recently been targeted toward youth is tobacco industry denormalization. Research has shown that denormalization approaches are effective in changing smoking-related attitudes and beliefs among youth. One such denormalization campaign was launched within a public health region of Ontario, Canada. To assess and evaluate the effects of this campaign, secondary school students were surveyed using the Tobacco Module of the School Health Action Planning and Evaluation System (SHAPES). The questionnaire asked about demographics, smoking behaviour, influence for smoking, and items reflecting attitudes and beliefs about smoking and the tobacco industry. Cross-sectional data was collected in 2005 from 7991 grades 9 to 12 students at 19 secondary schools within one Canadian public health region. Logistic regression analyses were used to determine if students’ attitudes and beliefs about tobacco industry practices were related to their own smoking behaviour. Future interventions and denormalization strategies should consider focusing on specific aspects of industry behaviour that are associated with youth smoking behaviour. The SHAPES-Ontario study was funded by the Ontario Ministry of Health and Long-Term Care, and Cancer Care Ontario.

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Smoking initiation among Asian-American college students

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Asian-American youth report lower rates of early cigarette smoking initiation than other ethnic groups, yet their initiation risk increases throughout adolescence. Thus, despite low rates of use, Asian-American youth may be at increased risk of initiating smoking during college. The present study reports smoking initiation among Asian-American college students. Based on previous research it was predicted that male gender, Korean ethnicity, greater acculturation, more peers who smoke and more positive attitudes toward smoking would predict smoking initiation. The present study included 287 Chinese- and Korean-American undergraduates who at baseline (freshman year) reported never having smoked a whole cigarette (52% Chinese, 48% female, 18 years old). Subjects were drawn from 433 participants in a longitudinal study of tobacco use, and were assessed annually each year in college. Those who reported smoking at least one cigarette at any of the follow-up assessments were classified as initiated (n=67). Baseline variables examined as predictors of initiation included ethnicity, tobacco industry, proportion of friends who smoked and personal approval of smoking. Overall, 25% (67/287) of baseline nonsmokers initiated smoking during the study period: 10.5% by their 2nd year in college, another 8.2% by 3rd year and an additional 6.4% by 4th year. A logistic regression was conducted to examine predictors of smoking initiation, yielding a significant overall model (p<0.001). Results indicated that male gender (p<0.002, OR=2.5 (95% CI:1.4-4.6)) and greater approval of smoking (p<0.001, OR=1.6 (95% CI:1.3-1.9)) were significantly associated with initiation. This study demonstrates substantial smoking initiation by Asian-American students, with most uptake occurring between the 1st and 2nd years in college. Males and those with a more favorable opinion of smoking at baseline were at significantly greater initiation risk. These data are among the first prospective data examining cigarette smoking initiation and highlight the value of prevention programs aimed at this population. Supported by grants 10RT-0142 and 12RT-0004 from the California Tobacco Related Disease Research Program and K02 DA17652 from the National Institute on Drug Abuse.

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WHAT DO COLLEGE SMokers BELIEVE ABOUT FLAVORED CIGARETTES, AND DO THEY SMOKE THEM DIFFERENTLY?

Richard J. O’Connor*, Rebecca L. Ashare, Larry W. Hawk, Jr., K. Michael Cummings

Cigarettes with flavors such as mocha and citrus have been introduced in growing numbers yet little is known about their appeal among college student smokers and non-smokers. Besides their potential marketing appeal to nonsmokers, there is concern that flavors might mask smoke harshness. Undergraduates (N=424) completed an on-line survey in which they viewed advertisements for 12 brands of cigarettes and rated each brand on various attributes. This paper focuses on two brands with flavored and non-flavored variants (Camel and Salem). Across brands, regular smokers had higher positive expectancies and lower negative expectancies than non-smokers. However, flavored cigarettes were rated more positively and less negatively than non-flavored cigarettes, regardless of brand family. Smoking status and positive expectancies predicted “intention to try” each brand. These expectancy effects were not limited to regular smokers. A pilot study (N=20) evaluated differences in puff topography and cigarette ratings between Camel Light and Camel Exotic Blend cigarettes. Participants took smaller puffs on the Exotic Blend versus Camel Light (42mL vs 48mL), but there was no reliable difference in total smoke volume or CO boost (6.25ppm vs 6.20ppm). Exotic Blend cigarettes were rated as more different from the participant’s usual brand, but otherwise the taste ratings did not differ. Overall, these preliminary data suggest that flavored cigarettes increased positive expectancies and decreased negative expectancies for smoking, that positive expectancies predicted greater intentions to smoke, but that such cigarettes were not smoked differently by current smokers.

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VALIDATION OF A BRIEF SMOKING CONSEQUENCES QUESTIONNAIRE FOR COLLEGE STUDENTS

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There exists a growing interest in the role of expectancies in the initiation and maintenance of smoking behavior. Expectancies include the perceived benefits (e.g., negative affect reduction) or negative consequences (e.g., health risks) of substance use. The 51-item Smoking Consequences Questionnaire (SCQ; Brandon & Baker, 1991) was developed to measure college student smokers’ expectancies regarding their tobacco use, and consists of 4 factors. Shortened forms of the SCQ and versions with larger factor structures have since been developed for use with adult and adolescent samples. However, since its origination with a college sample, neither a shortened version nor a version with a larger factor structure has been examined among college students. Brief versions of questionnaires are often preferred when used in a larger battery of questionnaires because participant burden is reduced and accuracy may be improved. Moreover, a larger factor structure offers more detailed information regarding smoking expectancies, which may help fine-tune prevention efforts. The purpose of this study was to examine the extended factor structure of a brief smoking consequences questionnaire for college students. As part of a larger 296-item survey, 315 undergraduate smokers at a Midwestern university completed the brief (30-item) Smoking Consequences Questionnaire-Adult (SCQ-A; Jeffries et al., 2004). A confirmatory factor analysis supported the use of a brief version of the SCQ-A for college students. Items loaded onto each specified factor at .57 or above (mean loading=.81). The composite reliability, a measure of internal consistency, for all nine factors was .79 or above. In addition, consistent with previous literature, positive expectancies (e.g., negative affect reduction, stimulation/state enhancement) increased with level of smoking and nicotine dependence. These findings suggest that use of a brief SCQ-A with a greater number of factors, which allows for examination of a broader range of expectancies, is appropriate for use with college students.


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THE PANEL TOBACCO USER SURVEY: SURVEILLANCE AND INTERVENTION EFFECTIVENESS AMONG 18 TO 24 YEAR OLD TOBACCO USERS

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Objectives: The aims of the study were to: (1) assess the tobacco use patterns and the levels of health professional intervention offered to 18 to 24 year old tobacco users; and (2) to assess the effectiveness of a brief cessation intervention.

Methods: A total of 184 tobacco users were recruited from community-based settings in a six county rural area. Participants completed the Panel Tobacco User Survey (PTUS), a brief 10-minute interview designed to assess tobacco use and quit patterns, level of healthcare professional intervention. Additionally participants were provided a brief intervention to quit tobacco by interviewers trained in cessation techniques. Participants reassessed at 2 weeks and 6 months post the baseline survey.

Results: The majority of participants reported that a healthcare professional assessed their tobacco use in the past year, although there was significant variability by professional type (physician vs. nurse vs. dentist) and type of tobacco services offered (advice vs. cessation). In the past year, female reported that they were significantly more likely to be assessed for tobacco use, receive advice, referral and counseling from all healthcare professionals. Overall 72% had reported at least one serious quit attempt, with 96% using the cold turkey method, 25% used an NRT and only 8% tried any type of behavioral counseling. The majority, 145 (79%) of the participants were interested in quitting tobacco, of which 26% were referred to a cessation program and 10.3% enrolled in a program by the 2-week follow up. A total of 162 agreed to participate in a 6-month follow-up and 114 (70.4%) of these individuals completed the follow-up interview. At the 6-month follow-up, 11 (9.6%) reported not using tobacco in the past 30 days and daily cigarette consumption dropped from 13.6 to 10.1 cigarettes per day (t=3.9, df=113, p<.01).

Conclusions: Surveillance approaches designed to discuss tobacco use practices is an effective public health approach to engage young tobacco users, understand their utilization of community based cessation programs, and to provide brief, effective counseling services.

Funding for this project was provided by the American Legacy Foundation and the Pennsylvania Department of Health.

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CORRELATES OF SMOKING AMONG YOUNG ADULTS

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There is very 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 among young adults, ages 18-30 years old. Three hundred and forty-two young adults completed a self-report survey regarding their health habits. Current smokers were compared to nonsmokers on demographic, social (e.g., peer smoking) and psychological factors (e.g., depression, alternative reinforcers). The results of a logistic regression analysis predicting smoking status revealed significant main effects for peer smoking, alternative reinforcers, and depression symptoms. For every standard deviation increase in alternative reinforcers (SD=2.69) increase in the number of smoking peers there was a 27% increase in the likelihood that a young adult was a smoker (OR=1.27, CI=1.16-1.40). For every standard deviation increase in alternative reinforcers (SD=58.21) there was a 30% reduction in the likelihood that a young adult was a smoker (OR=.71, CI=.56-.91). Finally, for every standard deviation increase in depressive symptoms there was a 41% increase in the likelihood that a young adult was a smoker (OR=1.41, CI=1.16-1.40). These findings provide preliminary information on variables that may be important to address in smoking cessation interventions for this age group.

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POS2-64

A COMPARISON OF POPULATION QUITTING BEHAVIOR BETWEEN YOUNG ADULT SMOKERS AND OLDER SMOKERS IN THE UNITED STATES, 2003

Karen Messer and John Pierce Moores, UCSD Cancer Center University of California, San Diego

Objective: To compare population quitting rates and predictors of quitting success, including use of pharmaceutical aids, between young adult (age 18-24 years) and older dependent smokers.

Data source: The national 2003 Tobacco Use Supplement to the Current Population Survey included 31,625 adults under age 65 years who were dependent on smoking tobacco. Detailed data were collected on smoking behavior, especially surrounding the most recent quit attempt.

Results: Young adults were much more likely than older adults both to try to quit (85% vs. 65% for smokers aged 35+ years) and to remain successfully abstinent for 6+ months (7.8% vs. 4.1%-4.5% for smokers aged 35+ years). Young adult smokers were less likely to use pharmaceutical aids (10% vs. 26% for smokers aged 50+ years) and there was little evidence that increased use of these aids would increase their successful quitting rate. Smoke-free homes increased successful quitting four-fold among all smokers.

Conclusion: A larger proportion that try to quit, more smoke-free homes and lower levels of addiction appear to explain the higher rates of successful quitting among young adult smokers as compared to older smokers. Use of pharmaceutical aids is low, and does not appear to confer benefit among young adult smokers who use such aids.

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POS2-65

COMPARING PREPACKAGED AND INTERNALLY DEVELOPED YOUTH SMOKING CESSATION PROGRAMS: UNIQUE AND COMMON ELEMENTS IN EXISTING COMMUNITY BASED PROGRAMS

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Knowledge about community-based youth smoking cessation treatments is limited, but growing. The Helping Young Smokers Quit (HYSQ) program profiled a national sample of 591 community-based youth cessation programs. Although the majority of programs used "prepackaged" programs developed and disseminated nationally, a measurable proportion (12.5%) indicated that they had developed their own youth smoking cessation treatment program internally. Using HYSQ data, this paper examines how internally developed programs compare to prepackaged programs with regard to community context, organizational context, format, and content. Bivariate comparisons show that the majority of both programs were school-based and included evidence-based cognitive-behavioral strategies such as self-monitoring, disrupting smoking patterns, and coping skills training. Internally-developed programs were more likely to provide treatment for other substances and to address other youth issues (e.g., life goals, violence and gangs) than were prepackaged programs (p<0.02). Internally developed programs were also shorter with regard to the length of each session and the duration of treatment than prepackaged programs. Although both types of programs reported most often that the primary reason for offering the program was the initiative of the organizational leadership, internally developed programs cited this reason more frequently (52.7% versus 35.1% for prepackaged; p<0.01). Prepackaged programs were more likely to report having adequate funding than were internally-developed programs (p<0.05). Multivariate analyses found that internally-developed programs were more likely to be offered in response to the initiative of the organization (OR=2.15, p=0.01) and more likely to be found in urban areas (OR=2.11, p=0.04). Prepackaged programs were more likely than internally developed program (OR=0.55, p=0.04) to be found in areas with high smoking prevalence. Results suggest organizations in urban areas with limited resources and multiple-risk youth are more likely to develop their own programs with broader focus than to use available prepackaged programs.

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POS2-66

USE OF EVIDENCE-BASED CESSATION TREATMENTS AMONG YOUNG ADULT SMOKERS IN THE UNITED STATES

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There is broad consensus that we need increased research on young adult smoking cessation. National data show reductions in smoking prevalence among all age groups except for 18 to 24 year old young adults. Recent national estimates are that 25.6% of men and 21.5% of women in this age group are current smokers. The 2005 National Health Interview Survey provides the first comprehensive data on smokers’ use of evidence-based smoking cessation programs over a decade. We compare young adult smokers (18-24 years, N=759) to adult smokers in two age groups (25-45 years, N=3,000; and 46 and older, N=2,752) with regard to smoking history, amount smoked, motivation to quit, serious quit attempts, and use of evidence-based treatments. Results are sample weighted; all reported differences are significant at p<.01. Compared to the two older age groups, young adult smokers begin smoking at a younger age (means=16.1, 17.5, and 18.5 years), smoke fewer cigarettes per day (means=11, 14, and 16), and are significantly more likely to report a serious quit attempt in the past year (i.e., abstinent for at least one day because they are seriously trying to quit; 49%, 44%, and 41%) and to use pharmaceutical aids (3% vs. 15%). They also report wanting to quit more often (72%, 71% and 66%). Smokers who reported a serious quit attempt in the past year also indicated use of specific smoking cessation treatments in their attempt. Among these smokers, there were no differences by age group in the proportions that reported using quitlines (1%, 2%, 2%), stop smoking classes, clinics or groups (2%, 2%, 2%), over-the-counter aids (2%, 2%, 2%) and the Internet or web (4%, 3%, 2%). Overall reported use of any behavioral treatment was low and consistent across age groups (4%, 4%, and 6%). However, young adult smokers were significantly less likely to use any pharmaceuticals (18%, 30%, 35%). This includes nicotine gum (6%, 12%, 14%), patch (12%, 18%, 22%), and Zyban, Bupropion, or Wellbutrin (3%, 9%, 8%). The paper will also present and discuss correlates of treatment use and implications for a young adult smoker research and policy agenda.

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POS2-67

SMOKING WHILE USING THE NICOTINE PATCH: EFFECTS ON AD LIB SMOKING AND SMOKING SATISFACTION IN A CO-MORBID POPULATION

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Current psychiatric disorders, previous substance use disorders (SUDs) and current illicit drug use are all associated with increased tobacco dependence and decreased likelihood of quitting smoking. The effectiveness of nicotine replacement therapies (NRT) as an aid to smoking reduction in these populations as harm reduction strategy has not previously been explored. A pilot study was conducted to determine whether smoking while using the nicotine patch would reduce smoking behaviour in a co-morbid sample. We hypothesized that concurrent use of NRT would help smokers reduce their smoking level (as measured by cigarettes per day and expired carbon monoxide levels), with concomitant attenuation of the positive subjective effects associated with smoking. The study was an open-label design whereby smokers were treated for 9 weeks with individualized doses of nicotine patch (7 to 64mg/24 hours). Daily diaries and 6 study visits measured specific aspects of smoking behaviour over time. Twenty-three subjects were enrolled, 43% of whom had a current psychiatric illness, 48% had a history of SUD, and 17% were currently using illicit drugs. The number of cigarettes smoked per day (+/-SD) was significantly reduced at the end of treatment (4.3+/-3) compared to baseline (22.8+/-12) (p<0.002), as were expired carbon monoxide levels (21.4+/-12 vs 9.6+/-6 ppm; p<0.01). Ratings of smoking satisfaction were reduced from baseline to end-of-treatment (15+/-19 (%maximum score)) to end-of-treatment (11+/-19 (%maximum score)); (p=0.001). Using NRT while smoking significantly reduced smoking behaviour in this population. Reductions in cigarettes per day were related to decreased ratings of smoking satisfaction, suggesting that allowing patients to smoke while on NRT may be an effective strategy to induce smoking remission in this population. Randomized double blind control trials are necessary to further develop this method to treat smokers with comorbidity. This study was funded by the Ontario Ministry of Health Promotion.

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POS2-68
TOBACCO SMOKERS WITH CO-OCCURRING MENTAL ILLNESS: A DESCRIPTIVE ANALYSIS
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This study examined the characteristics of smokers with co-occurring mental illness and treatment of their tobacco use by psychiatry residents. A systematic chart review was conducted on 570 adult psychiatric outpatients seen by third and fourth year psychiatry residents at an academic medical center between July and November 2005. Information was collected on patient demographics, smoking history, and psychiatric and general medical diagnoses. Smoking status was 21% current, 35% former, and 43% never. Current smokers averaged 12 cigarettes per day (SD=11) and 24 years (SD=13) of smoking. Highest smoking rates were found among patients with alcohol and drug (33%), psychotic (31%), or bipolar (29%) disorders. Current smokers were more likely to be younger, unemployed, and not married compared to former and never smokers (p<.05). Among current smokers, 8% had tobacco-related diseases and 20% had health conditions worsened by tobacco use. Few residents advised patients who smoked to quit (3%), assessed readiness to quit (5%), offered assistance (9%), or arranged follow up (5%), with no differences by presence of a disease caused or worsened by smoking. Despite their chronic tobacco use and tobacco-related health conditions, few psychiatric patients received intervention for quitting smoking. Obstacles to active psychiatric treatment of nicotine dependence need to be addressed.

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POS2-69
HARDENING, TOBACCO USE AND MENTAL HEALTH: IS THEREN ANY CONNECTION?
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Some have questioned whether the smoking population as a whole has “hardened” or is more resistant to quitting. While evidence for the hardening hypothesis has so far been inconclusive, there is concern that individuals with mental disorders may constitute a growing fraction of the remaining smoking population. Indeed, the burden of morbidity and mortality associated with cigarette smoking is particularly great among individuals with mental disorders, a group that comprises a disproportionate number of smokers. We examined serious psychological distress (SPD) and current smoking among adults from 2000 to 2005 using the National Health Interview Survey (NHIS). The NHIS is an annual, national probability-based, household survey of the civilian population. Sample sizes for the years we examined were approximately 31,000 adults. The K6 scale, a psychometrically validated screening tool, was used to measure SPD in the past month. The K6 includes six questions that measure on a scale of 0 to 4 how frequently respondents experience six symptoms of distress (e.g., nervousness). Respondents with scores of 13 were classified as having SPD. Over the five-year period, the rate of SPD in the US adult population was fairly stable at approximately 3.1% while smoking prevalence demonstrated small but consistent reductions annually for both current and daily smoking. This decline in smoking was not observed among those with SPD and the rate of smoking among those with SPD was greater than 40%. Also, the percent of smokers with SPD over time increased from 5% in 2000 to 6% in 2005. Lastly, the quit ratio, or the ratio of former to ever smokers, is notably lower for those with SPD (31%) vs. those without SPD (51%). In summary, adults with poorer mental health were over-represented among smokers. And the decrease in smoking rates noted in the last 5 years was not seen among those with SPD. These initial findings suggest that over time the residual pool of smokers may be increasingly composed of smokers with co-morbid mental health conditions. Thus lend credibility to the hardening or “hard core” smoking hypothesis with respect to smokers with co-morbidities.

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POS2-70
COMORBID PSYCHIATRIC AND SUBSTANCE USE DISORDERS IN AMERICAN INDIAN VETERANS WITH NICOTINE DEPENDENCE
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Objectives: To examine the co-occurrence of current DSM-IV nicotine dependence and other axis I psychiatric and substance use disorders in a sample of Nicotine-Dependent American Indian Veterans.

Methods: This community-based survey consisted of 558 American Indian Veterans from the Minneapolis VA Hospital. Participants completed a demographic questionnaire, then a computer-based algorithmic program, the Quick Diagnostic Interview Schedule (Q-DIS), which provides Axis I psychiatric diagnoses and one Axis II diagnosis (Anti-Social Personality Disorder). Cross-tabulations were used to calculate prevalences of disorders. Odds ratios with 95% C.I. derived from chi-square analysis were used to study associations between nicotine dependence and the same disorders.

Results: Nicotine dependence rates were higher among American Indian veterans compared to the general U.S. population (17.6% vs. 12.8%). Nicotine dependence was significantly associated with comorbid anxiety disorders, affective disorders, post-traumatic stress disorder, and gambling disorders. Nicotine dependence and substance use disorders were not significantly associated. Nicotine-dependent American Indian veterans had noticeably lower rates of alcohol and drug disorders compared to nicotine dependent individuals in a larger U.S. sample (20.4% vs. 34.5% and 24.4% vs. 52.4%, respectively).

Conclusions: The lack of an association between nicotine dependence with both alcohol and drug use disorders in this A.I. Veteran sample was surprising. Nicotine dependence has been known to be highly associated with comorbid substance use disorders among general U.S. samples. The traditional and ceremonial use and history of tobacco may need to be taken into consideration regarding the lack of association between nicotine and other substances of abuse. Acknowledgements: Paul Thuras, Ph.D., Ross Crosby, Ph.D., and Judy Garrard, Ph.D. for their invaluable assistance Supported by Minneapolis Veterans Administration Hospital HSR.

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POS2-71
GENDER DIFFERENCES IN ASSOCIATIONS BETWEEN SUBSTANCE USE DIAGNOSES AND SMOKING BEHAVIOR
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Alcohol and drug use disorders are highly comorbid with tobacco use. Given the substantial health risks associated with concurrent substance and tobacco use, there has been a growing effort to address smoking cessation in substance abuse settings. However, the relationship between smoking and smoking status is complicated, and it is important to first understand their degree of association. Epidemiologic data have characterized the relationship between substance use disorders and nicotine dependence, however less is known about the relationship between substance use and smoking status. Clinical care guidelines recommend assessing current smoking status in health care settings, rather than DSM-IV nicotine dependence. To this end, we investigated whether current DSM-IV substance abuse disorders (alcohol abuse, alcohol dependence, drug abuse, drug dependence) increased the odds of daily or even non-daily smoking (possible status: daily, non-daily, never smoker) or current DSM-IV nicotine dependence. As base rates of alcohol and drug use disorders are known to be greater in men, we further examined how these associations varied by gender. Using population based data from the National Epidemiologic Survey on Alcohol and Related Conditions (Wave I 2001-2002, n=42,565), we found that current substance use diagnoses significantly increased the odds of current smoking (daily and non-daily). For example, those with drug dependence were more likely to be a daily smoker (OR=8.6; 95% C.I.: 6.9-10.6), and more likely to be a non-daily smoker (OR=5.7; 95% C.I.: 4.5-7.1). These associations were significantly greater in females, compared to males. Substance abuse treatment providers should be aware of the high comorbidity between smoking behavior and substance use diagnoses, particularly among females. Further work is needed to identify the optimal timing and treatment for smoking cessation in those with concurrent substance use disorders.

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POS2-72 ANXIETY LEVELS AND THE ROLE OF SMOKING-RELATED OUTCOME EXPECTANCIES AMONG COLLEGE FRESHMAN WHO SMOKE COMPARED TO THEIR SMOKING AND BINGE DRINKING PEERS

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Introduction: Cigarette smoking is a prevalent co-morbid health risk behavior among those with histories of alcohol abuse. Little is known, however, about the relationship between the value of smoking-related negative reinforcement expectancies and rates of smoking and binge drinking among college students. Data suggests that binge drinking may influence continued nicotine use among college students and may increase the likelihood of nicotine dependence. One explanation is that higher levels of situational anxiety in students who report smoking and binge drinking may lead to inflated beliefs about the negative reinforcement value of nicotine. This study examined anxiety and smoking expectancies among three groups of college students: [1] those reporting no active substance use (n=23), [2] those reporting only smoking cigarettes (n=25), and [3] those reporting smoking cigarettes and binge drinking (n=21).

Methods: Participants were college freshman who completed online questionnaires during their first semester of college. Anxiety levels were assessed for all participants while smoking outcome expectancies were assessed for those individuals in each of the two smoking groups.

Results: A repeated measures analysis of variance (ANOVA) yielded a significant group x anxiety interaction [F (1,66)=9.90, P<.01] indicating that smokers who also binge drank had significantly greater increases in state anxiety over three months. A comparison of the smoking groups further revealed a significant group x negative reinforcement smoking expectancy interaction [F (1,44)=4.40, P<.05] indicating that binge drinking smokers have skewed views about the negative reinforcement value of nicotine. Consistent with previous research, our findings indicate that smokers who also report binge drinking endorse higher levels of anxiety and show stronger smoking-related negative reinforcement expectancies compared to their peers who only report smoking. These findings support the notion that increased regard for the subjective properties of nicotine among binge drinking smokers may enhance the probability of increased and prolonged use of cigarettes among this population.

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POS2-73 NICOTINIC MODULATION OF WORKING MEMORY IN ATTENTION-DEFICIT/HYPERACTIVITY DISORDER (ADHD): IMPLICATIONS FOR CIGARETTE SMOKING

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Research has demonstrated that abstinence from cigarettes in regular smokers results in working memory impairment suggesting a role for the cholinergic system in this cognitive process. Individuals with ADHD smoke cigarettes at significantly higher rates than individuals without this diagnosis. People with ADHD also display specific cognitive deficits including difficulty on tasks of working memory. It may be that people with ADHD smoke at higher rates in part because of a cognitive benefit they experience from smoking (including improvement in behavioral inhibition, sustained attention, and working memory). This study tested the hypothesis that acute nicotine administration would improve working memory in non-smoking young adults with ADHD. A within-subject, single-dose, acute, double-blind study assessed the effects of three drug conditions: transdermal nicotine (7 mg for 45 minutes NIC), methylphenidate (20 mg immediate release MET) and placebo. Subjects were non-smoking young adults (n=8) diagnosed with DSM-IV ADHD Combined Type. Working memory was assessed using the n-back task at four parametric variations of difficulty (0-back, 1-back, 2-back, and 3-back). Nicotine, but not methylphenidate, significantly (p<.05) reduced false alarm rate compared to placebo on this task indicating that subjects responded less impulsively during nicotine treatment. Accuracy (hits-false alarms) was not significantly affected by either drug condition although there was a small trend (p=.13) for an improvement following nicotine treatment. These data suggest that the cholinergic system may be important in modulating impulsive responding in ADHD. The vulnerability to smoking initiation in adolescents with ADHD may be related to the cognitive symptoms of ADHD, which are alleviated by nicotine. Future directions include the exploration of novel nicotinic agents for treating the cognitive symptoms of ADHD.

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POS2-74 DEPRESSION, SMOKING, AND ALCOHOL CONSUMPTION FOLLOWING TREATMENT FOR ALCOHOL AND NICOTINE DEPENDENCE

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We conducted secondary analysis of data from the Timing of Alcohol and Smoking Cessation Study, a clinical trial that examined timing of tobacco intervention in a population undergoing alcohol treatment, to examine the impact of depression on treatment outcomes. Participants were 462 individuals (68% male; 76% Caucasian) who completed intensive alcohol treatment and concurrent or delayed smoking cessation treatment. Assessments of alcohol use, smoking, and depression were made at baseline and at 6, 12, and 18 months after randomization to intervention. Overall, rates of depression decreased following treatment. To examine the relationships between depression and treatment/relapse outcomes, two longitudinal logistic regressions modeled modeled alcohol abstinence for the past 6 months and smoking 7-day point prevalence. Depression was used as a dynamic predictor to determine whether depression at one time point would predict smoking or drinking outcomes at the next time point. Depression did not significantly predict 7-day point prevalence (p=.73, OR=.93, 95% CI=.58, 1.56). After taking into account demographics, baseline alcohol consumption, smoking treatment timing, and time of follow-up, depression significantly predicted drinking at the subsequent time point (p<.01, OR=1.69, 95% CI[1.16, 2.46]). These findings suggest that although depression does not negatively impact the success of smoking cessation treatment, there is a need for ongoing management of depressive symptoms in this population.

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POS2-75 PSYCHOPATHOLOGIC DIMENSIONS OF DEPRESSION AND SMOKING CESSATION

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The impact of depressive symptoms on smoking cessation is complex and poorly understood. One potential barrier to understanding this relationship is depression's clinical heterogeneity. Because different psychopathologic components of depression may have distinct etiologies, examining their differential effects on smoking may elucidate mechanisms underlying the smoking-depression relationship. Anhedonia/low positive affect (AN), negative affect (NA), somatic features (SF), and interpersonal disturbance (IP) have been identified as unique dimensions of depression and can be measured by the Center for Epidemiological Studies Depression Scale (CESD). This study examined common and unique effects of these CESD-dimensions on: (1) patterns of nicotine dependence (measured by the WISDM-68 & FTND); (2) self-reported nicotine withdrawal; and (3) smoking relapse (verified by self-report and carbon monoxide assessments) in 157 participants enrolled in a smoking cessation clinical trial for heavy social drinkers. Each dimension univariate- and multivariate analyses including all dimensions as predictors showed that only SF uniquely predicted tolerance motives, beta=2.77, and FTND scores, beta=2.1. Only SNS predicted greater post-quit withdrawal, when controlling for pre-quit scores, beta=2.2, p=.0048, and the other dimensions, beta=2.4, p=.0110. GEE analyses predicting abstinence at 8, 16, 26 weeks post quit date showed that NA, SF, and AN univariately predicted relapse, ORs >1.68, ps <.0070. Only AN predicted abstinence incrementally to the other dimensions, even when controlling for FTND, cig/day, and past major depression, OR=1.45 (95% CI[1.14-1.85]; p=.020. These results indicate that although all components of depression associate with dependence and/or relapse, only AN has a unique and independent effect on abstinence-provoked withdrawal and smoking outcomes. Interventions targeting anhedonia and low positive affect may be useful for depressed smokers trying to quit.

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POS2-76 GAMBLING TASK PERFORMANCE IN SCHIZOPHRENIA AND NICOTINE DEPENDENCE

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Background: The Iowa Gambling Task (IGT) assesses risk-reward decision-making. Some but not all studies have found that individuals with schizophrenia perform disadvantageously on the task whereas more consistent deficits in SZ have been elicited with the Wisconsin Card Sorting Task (WCST), a test of executive function. Prior studies in non-SZ groups found differences in IGT performance related to tobacco smoking. However, no research examining the relationship between smoking and IGT performance in patients with schizophrenia has been systematically studied in individuals with psychotic disorders. Methods: Neurocognitive assessment of SZ smokers (n=32) and non-smokers (n=13) and non-SZ (CON) smokers (n=15) and non-smokers (n=12) was performed. Smoking status was assessed under non-deprivation conditions. Results: The SZ group trended towards worse performance (select all cards from advantageous decks) on the IGT (SZ vs. CON scores: 4.7 vs. 16.8; p=0.07). Non-significant within-diagnostic group differences were observed in opposite directions in relationship to tobacco use status (SZ smoker vs. non: 5.8 vs. 2.0, p=0.1; CON, smoker vs. non: 12.9 vs. 21.7, p<0.01). Across all groups, correlations between IGT and WCST performance (r=0.30 to r=0.33, p<0.01) were observed on multiple WCST measures (errors, perseveration, and category completion), and, within the SZ group, correlations reached significance at p<0.05 only for perseverative responses and errors (for each, r=0.31).

Conclusions: Across SZ and CON smoking and non-smoking groups, worse IGT performance correlates with worse WCST performance suggesting an overlap in cognitive processes assessed by the IGT and WCST persistent across diagnostic groups. Among SZ subjects, the significant correlations between IGT and WCST performance on perseverative measures suggest that difficulties in shifting patterns of behaviors might be particularly salient for decision-making in SZ. Although individuals with SZ performed marginally worse than CON subjects on the IGT, preliminary data suggest that these differences are not significantly modified by smoking status.

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POS2-77 SMOKING OUTCOME EXPECTANCIES IN SMOKERS WITH SCHIZOPHRENIA AND CONTROLS

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Most people with schizophrenia are cigarette smokers (70-90%) but little is known about factors that mediate smoking in these patients. We measured smoking outcome expectancies in smokers with schizophrenia or schizoaffective disorder (SCZ; n=57) and compared them to those of heavy smokers without psychiatric illness (CON; n=47). Outcome expectancies were measured using the Smoking Effects Questionnaire (SEQ), a validated measure of outcome expectancies in general adult smokers (Rohsenow et al., 2003). This questionnaire contains 3 negative outcome scales (Negative physical effects, Negative psychosocial effects, Future health concerns) and 4 positive outcome scales (Reduce negative affect, Stimulation, Positive social effects, Weight control). The groups did not differ on gender (64% male), age (45.8 +/-8.5 yrs), smoking rate (30.2 +/-11.9 cpd) or FTND score (7.4 ±1.6). Most participants indicated that they wanted to quit smoking someday (SCZ: 93%; CON: 89%; p<0.05) and tended to rate Negative psychosocial effects more highly than CON (SCZ: 1.74 ±0.8; CON: 1.55 ±0.8; N.S.). SCZ participants gave higher importance ratings for the SEQ, the Reduce negative affect scale received the highest importance scores (SCZ: 93%; CON: 89%; N.S.), but few wanted to quit within the next month (SCZ: 20%; CON: 37%; N.S.). On the SEQ, the Reduce negative affect scale received the highest importance scores in both groups (SCZ: 2.40 +/-0.8; CON: 2.38 +/-0.7; N.S.), followed by Future health concerns (SCZ: 1.97 +/-1.0; 1.74 +/-1.1; N.S.) and Negative physical effects (SCZ: 1.74 ±0.8; CON: 1.55 ±0.8; N.S.). SCZ participants gave higher importance ratings than CON on the Positive social effects scale (SCZ: 1.62 +/-0.9; CON: 1.29 +/-0.8; p<0.05) and tended to rate Negative psychosocial effects more highly than CON (SCZ 1.44 +/-0.9; CON 1.11 +/-0.9; p=0.07). These data are consistent with previous findings that reducing negative affect is an important smoking expectancy in adult smokers and extend these findings to outpatients with schizophrenia. Smokers with schizophrenia were as aware of the immediate and future health risks of smoking as non-psychiatric smokers in this study. The findings also suggest that, in addition to biological and environmental variables, which contribute to smoking persistence in schizophrenia, these patients may derive more positive social effects from smoking than do non-psychiatric heavy smokers.

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POS2-78 TRANSLATING AND ADAPTING A SMOKING RELAPSE INTERVENTION FOR PREGNANT AND POST-PARTUM HISPANIC WOMEN

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As a result of increased public awareness, more women are quitting smoking due to their pregnancy. Unfortunately, the vast majority return to smoking late in their pregnancy or within 3 months post-partum. As part of an ongoing, NCI-funded clinical trial, we have developed self-help relapse prevention materials for this population. This ten-booklet series, entitled Forever Free for Baby & Me, has been adapted from our earlier Forever Free relapse-prevention program, which has demonstrated efficacy in two clinical trials (Brandon et al, 2000, 2004). While publicizing the ongoing clinical trial, we have been informed of the relative lack of smoking cessation materials for Hispanic women. The prevalence of smoking among Hispanic women varies as a function of Hispanic subgroup (i.e., country of origin). Overall, however, Hispanic women are more likely than Non-Hispanic women to make a smoking quit attempt, indicating that relapse-prevention interventions may be a particularly good match for this population. In response to this demand, we are “transcreating” the Forever Free for Baby & Me relapse-prevention booklets, from English to Spanish. Transcreation involves translating the text into another language, as well as infusing culturally relevant context, photos, and themes. Qualitative approaches, such as focus groups and learner verification interviews, are used to create materials with content that is culturally and linguistically appropriate for the intended population. Specifically, a population-based ethnic sample provides the research team feedback about the translated booklets on areas such as comprehension, attractiveness, social acceptability, and persuasion. Given the need for a range of culturally-appropriate tobacco control materials, we will describe the transcreation process and provide data from this project, including the qualitative results from the focus groups and learner verification interviews. In addition, we will provide a comparison of feedback from the English and Spanish versions of the booklets, and we will display the final product of the transcreation process—the Spanish version of the booklets.

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POS2-79 AN INVESTIGATION OF STRESS, SELF-EFFICACY, AND SOCIAL SUPPORT AS PREDICTORS OF SMOKING STATUS FOR POSTPARTUM WOMEN

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Smoking cessation during pregnancy is often temporary, with many women relapsing postpartum. This study followed 103 women previously enrolled in a perinatal education program to examine the role of self-efficacy as it relates to their smoking status in the postpartum period. A cognitive-behavioral model of smoking behavior was proposed wherein the relationships amongst stress, social support and self-efficacy were examined for their effects on smoking behavior. This model proposes that how we think and what we experience does have an effect on our behavior. The results indicate that remote from delivery (12 months or more postpartum), stress (beta=-.06, p<.01) has a direct relationship with smoking behavior, as well as having a direct relationship with self-efficacy (beta=-.30, p<.05). However, further analysis determined that self-efficacy is a significant (beta=-.15, p<.01) mediating factor in the stress-smoking relationship, so that stress (beta=-.10, p<.07) no longer has a direct effect. Furthermore, although social support was hypothesized to be a moderating factor with self efficacy and smoking, results indicate that there was no moderating effect (beta=-.07, p=.60). Also, comparisons of the group of women who currently smoke to those women who quit or never smoked demonstrated that higher stress, lower number of supportive individuals, and a partner who smokes were significantly related to a woman's increased likelihood to be a current smoker. This research supports a cognitive-behavior model and indicates that women who are confident in their ability to initiate and sustain change are more likely to be successful, especially if they live in a supportive, non-smoking environment. Specific interventions could be developed for women during the postpartum period to support those women who quit during pregnancy and to further investigate the specific ways social support enhances self-efficacy and helps alleviate stress.

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POS2-80 COPIING BEHAVIORS OF LOW-INCOME WOMEN ATTEMPTING SMOKING CESSATION IN EARLY PREGNANCY

Monica Scheibmeir, Ph.D.*, University of Kansas Medical Center

Purpose: It is unclear what types of coping strategies “spontaneous” quitters use during pregnancy to avoid smoking. Relapse rates following delivery exceed 50% of those women who attempt smoking cessation during pregnancy, so identifying func-
tional coping strategies among successful quitters would be of benefit. The purpose of this study was to explore the types, frequency, and effectiveness of coping strate-
gies used by low-income women who were attempting to stop smoking in early preg-nancy.

Theoretical Framework: A grounded theory approach was used to describe the process of quitting smoking during pregnancy for low-income pregnant ex-smokers. Lazarus’s stress and coping theory was used to organize the data from the interviews. Quitting smoking was perceived as the stressor, and content was examined to identi-
fy if active or passing coping strategies were being used by the spontaneous quitters.

Sample: 60 pregnant women who self-reported as an ex-smoker were recruited to participate. Of the 60 self-reported ex-smokers, 49 had biological confirmation of their smoking status.

Method: Face-to-face interviews were conducted prior to the 20th week of gesta-
tion. Women were asked to describe how they handled an urge or temptation to smoke. In addition, participants were given the opportunity to talk about other strate-
gies they used to avoid getting urges or cravings to smoke while pregnant.

Results: Pregnant women identified stopping smoking as a stressor. Participants identified very few coping strategies to deal with cessation. Passive coping appeared to be as effective as active coping in maintaining abstinence. Factors associated with the use of coping strategies included social support (i.e. presence of smokers in the home, limited financial support, being rewarded for not smoking while pregnant) and pregnancy specific issues (i.e. feeling nauseous, having labile mood swings, having an unplanned pregnancy). Participants stated that the symptoms associated with pregnancy, especially experiencing labile moods made coping with not smoking much harder than when they were not pregnant.

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POS2-82 DIFFERENCES BETWEEN AFRICAN AMERICAN AND CAUCASIAN WOMEN WHO QUIT SMOKING DURING PREGNANCY

Michele D. Levine*, Marsha D. Marcus, Melissa A. Kalarchian, and Julia Soulakova

Differences in the smoking and weight-related behaviors and attitudes of African American (AA) and Caucasian (CA) women have been reported. For example, AA women are more likely to relapse to smoking postpartum, and may be less con-
cerned about weight compared to CA women. As part of an ongoing study of post-
partum smoking relapse, we sought to investigate differences in the smoking, weight concerns and pregnancy-related behaviors of AA and CA women who quit smoking during pregnancy. Pregnant women (n=65 AA and 97 CA) completed measures of nicotine dependence, smoking history, weight concerns and pregnancy-related fac-
tors. On average, women were 24.1 ±5.4 years old, smoked 13.8 ±8.6 cigarettes daily prior to quitting and were 31.9 ±3.7 weeks pregnant. A majority of women (70.2%) reported plans to stay abstinent after delivery, but less than half (41.7%) felt confident to do so. There were no consistent differences in nicotine dependence or smoking history between AA and CA, with the exception that AA women smoked fewer cigarettes per day before becoming pregnant (13.1 vs. 16.6, p=.01). In addi-
tion, AA and CA women did not differ in motivation or intention to remain abstinent postpartum or in smoking-related weight concerns. However, AA women were less likely to intend to breastfeed, and more likely to describe the current pregnancy as unintentional than were CA women (p<.05). The lack of consistent differences between AA and CA women in smoking or weight concerns, coupled with the simi-
arity in intention and motivation, suggests that other factors, such as differences in reasons for quitting, stress or mood, may explain differences in postpartum relapse rates.

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POS2-81 THE RELATIONSHIP BETWEEN SYMPTOMS OF PREGNANCY AND SMOKING STATUS AMONG LOW-INCOME PREGNANT WOMEN

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It is a commonly held belief among health care providers that symptoms such as nausea and fatigue contribute to the smoking abstinence observed among pregnant women, yet is not clear from the literature if physiological changes associated with pregnancy have any impact on the smoking status of women experiencing pregnancy. The purpose of this study was to identify a possible relationship between common symptoms of pregnancy and smoking status among disadvantage pregnant women. This study employed a cross-sectional design in which pregnant women (N=127) were asked to complete a series of questionnaires that inquired about symptoms of pregnancy, smoking history, depressive symptoms, and types of coping patterns. All pregnant participants were receiving Medicaid coverage of their health care while pregnant. Participants completed the questionnaire prior to the 20th week of gestation. Among the participants 48% (n=69) self-reported as being an ex-smoker with 52% (n=75) reporting active smoking in the current pregnancy. Biological confir-
mation was obtained from any participant who reported to be abstaining from cigarettes. The sample was predominately white, young, unmarried, and having experienced previous pregnancies. There were no significant differences between pregnant smokers and ex-smokers on the presence of nausea (x2=7.6, p=107), but differences were note between the groups on the presence of headaches (x2=10.60, p=.03) and fatigue (x2=7.42, p=.05) with pregnant ex-smokers reporting more fatigue and frequent headaches than current smokers. Contrary to popular belief, morning-
sickness was not experienced more often by pregnant ex-smokers than current smokers in this sample of low-income pregnant women. It is possible that symptoms other than nausea may play a role in helping pregnant women reduce their tobacco consumption.

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POS2-83 A PILOT STUDY TESTING FEASIBILITY AND EFFICACY OF NICOTINE REPLACEMENT THERAPY IN PREGNANT AFRICAN AMERICAN SMOKERS

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This presentation will describe the results of a pilot study designed to test the potential effectiveness and overall nicotine exposure of high and low dose patch for smoking cessation during pregnancy in African American women. The pilot study was done in preparation for a large clinical trial. The design is consistent with FDA rec-
ommendations of using nicotine patch for smoking cessation in pregnancy (i.e., only those women who failed to quit smoking with a behavioral intervention were given the patch). Three hundred and twenty were screened for eligibility. Forty-five subjects were eligible for recruitment (pregnant smokers, over 18 years old, greater than 13 and less than 27 weeks of gestation). Of these, 31 women consented to participate. Twenty-three women appeared for their first follow-up visit after receiving a behav-
ioral smoking cessation intervention; however, only 1 woman was able to quit smok-
ing with the behavioral intervention alone. To date, eight women were administered transdermal nicotine as an adjunctive treatment for smoking cessation. Assignment of patch dose is based on baseline salivary cotinine levels while smoking. Fifteen women did not receive the patch at the second visit for the following reasons (seven for low salivary cotinine levels (<30 ng/ml.), two for pregnancy loss prior to patch use, one for early delivery (she had reached 37 weeks, but had not completed the inter-
vention), one quit smoking via the behavioral intervention, one passive refusals and one active refusal to continue). Our results indicate that all eight subjects had sali-
vary cotinine levels after treatment below those measured at the time of intervention initiation. We also collected information on the socio-demographic, smoking and psy-
cho-behavioral information regarding depression and alcohol and illicit substance, which may impact on smoking treatment. Data on the baseline characteristics of the population, challenges with recruitment, biochemical measurement data, as well as efficacy and tolerability data will be presented.

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POS2-84 THE INFLUENCE OF SUBJECTIVE SOCIAL STATUS ON VULNERABILITY TO POSTPARTUM SMOKING AMONG YOUNG PREGNANT WOMEN

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Pregnancy represents a unique public health opportunity to capitalize on high rates of spontaneous smoking cessation. Unfortunately, although up to half of all pregnant women who smoke quit during their pregnancies, the vast majority (up to 80%) resume smoking by one year postpartum. Thus, it is critical that simple, easily measured markers of increased risk for postpartum smoking are identified. Although objective measures of socioeconomic status (SES) predict smoking relapse, subjective perceptions of social status have not previously been examined. However, subjective social status might offer incremental prediction over objective indices because of (1) greater comprehensiveness, (2) the ability to capture perceptions of inequity, and (3) greater applicability to pregnant women, whose income, education, and job status may be interrupted pre- and/or postpartum. This study used multiple regression equations to examine the associations between subjective social status and known risk factors for postpartum smoking among 123 racially diverse pregnant women (aged 18-24) who quit smoking because of their pregnancy. In addition to unadjusted analyses, adjusted analyses, controlling for education, income, race/ethnicity, and partner status, were conducted. Results of both unadjusted and adjusted analyses indicated that perceptions of low social status were positively associated with tobacco dependence, self-rated likelihood of smoking after childbirth, temptations, and negative affect; and negatively associated with self-efficacy, positive affect, and social support. Together, these results suggest that subjective social status may be a key marker of vulnerability to postpartum smoking relapse among young pregnant women who quit smoking during their pregnancies, and that subjective social status is incrementally predictive of vulnerability to postpartum smoking over and above traditional indicators of SES and other demographics. Results also suggest potential points of intervention that can be incorporated into relapse prevention programming; however, definitive results await longitudinal analysis and the inclusion of follow-up smoking status.

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POS2-85 HOW PREDICTIVE ARE THE PREDICTORS OF SMOKING CESSION?

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Knowing what predicts cessation presumably can help us tailor interventions towards smokers' individual vulnerabilities. Thus, there has been more than 30 years of extensive research effort to identify predictors of successful quitting. This synthesis retrieves empirical studies on predictors from 1970 to 2006, using Medline and PsycINFO databases. Only prospective studies with univariate statistical tests of variables and sample sizes > 50 were included in this review, resulting in 130 studies. Predictors had to be assessed in at least 5 studies to be included, resulting in 39 variables assessed. Each variable was coded for significance by study. We developed a statistical model to summarize the effect sizes and used lower bound confidence intervals to identify the variables that consistently predicted cessation across studies. Six factors emerged as consistent predictors of successful quitting with small effect sizes (Cohen's definition) ranging from 0.1 to 0.12: intention to quit, stress, social pressure, self-efficacy, motivation, and length of previous quit. Sixteen other variables were also found to be significantly related to cessation with even smaller effect sizes from 0.03 to 0.08: CPD, previous quit attempt, age at first cigarette, time until first cigarette, Fagerstrom score, other smokers, social support, health problems, number of previous quit attempts, health beliefs, depression, age, education, gender, alcohol use, and marital status. In short, the effect sizes are small even for the best predictors and are inconsistent for most of the predictors. This calls into question the benefits of continued research on predictors. In terms of developing assessment and intervention protocols, development of more finely tuned measurements of any single construct may be less beneficial than assessing several constructs using simple measures such as single-item questions. It may be more beneficial simply to count how many risk factors an individual has (by using simple measures) rather than try to zero in on any one particular risk factor. In other words, smokers with more risk factors need more help and this should be the focus of interventions.

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POS2-86 PROSPECTIVE PREDICTORS OF LONG-TERM ABSTINENCE VERSUS RELAPSE AMONG SMOKERS WHO QUIT AS YOUNG ADULTS

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Background: The rise in smoking among young adults is cause for concern, and while most young adult smokers want to quit, there is little information about what predicts long-term success of quitting as a young adult.

Objective: We sought to identify prospective predictors of long-term abstinence versus relapse among individuals who quit smoking as young adults.

Methods: Participants from an ongoing longitudinal study of smoking who had quit for at least one year between the ages of 18 and 24 (n=327) were divided into those who later reported not smoking for more than five years (long-term abstinence) or reported current smoking (relapse). Logistic regression was used to examine odds ratios of prospective predictors of long-term abstinence versus relapse.

Results: Overall, 67% of participants maintained long-term abstinence and 33% relapsed. The strongest predictor of avoiding relapse was becoming married to a non-smoker (adjusted odds ratio [OR]=0.07; 95% confidence interval [CI]=0.03, 0.21). Other predictors included making one lifetime quit attempt (adjusted OR=0.13; 95% CI=0.04, 0.44), having as a young adult only one parent who smoked (adjusted OR=0.23; 95% CI=0.06, 0.93), and working in a completely smoke-free building (adjusted OR=0.13; 95% CI=0.03, 0.58).

Conclusions: The factors related to smoking in the social environment played the largest role in predicting relapse versus long-term abstinence. This research was supported by grant DA03555 from the National Institute on Drug Abuse.

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POS2-87 THE ROLE OF DISCRETE EMOTIONS ON INTENTION TO QUIT AND ABSTINENCE

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The role of discrete emotions related to current smoking behavior and quitting on cessation outcomes has yet to be examined. Based on Fishbein's Integrated Model of Behavior Change, the current study assessed the relationship between pretreatment emotions about smoking, quitting intention and 8-week abstinence. Participants were 242 treatment seeking smokers who had received 8-weeks of smoking cessation treatment that included 21mg nicotine patch therapy and four brief smoking cessation counseling sessions. The emotions of "proud" and "enthusiastic" about quitting and "disgusted" about current smoking were significantly correlated with quitting intention (p<0.05), although pretreatment intention to quit did not predict 8-week abstinence. This may have been attributable to a ceiling effect in the quitting intention data. Pretreatment emotions about smoking and quitting did not predict 8-week abstinence in the current sample. Together, these data suggest that the emotions of "proud" and "enthusiastic" about quitting and "disgusted" about current smoking have more influence on quitting intention than on actual quitting outcomes.

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POS2-88

PREDICTORS OF SHORT-TERM SMOKING ABstinENCE AMONG SMOKERS IN EARLY ALCOHOL RECOVERY: PRELIMINARY FINDINGS

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Studies indicate that the smoking cessation success rate for smokers in long-term alcohol recovery is similar to the rate in the general population of smokers. By contrast, the success rate of smokers in early alcohol recovery is sharply lower. In this preliminary study of smokers (N=37) with 2-12 months of alcohol abstinence, we investigated the ability of baseline variables to predict smoking abstinence one week after their scheduled quit day. The treatment protocol included 7 quit smoking counseling sessions, 7 weeks of nicotine patch therapy and 8 weeks of either 300-mg bupropion or placebo (double blind). In this study, the first to incorporate multiple measures of key constructs with this population, the predictors included 3 measures of dependence: FTND. WISDM-98, Glover-Nilsson Behaviorality Dependence Questionnaire; and two measures of coping skills: Coping Response Inventory (CRI), Nicotine and Other Substances Interaction Expectancies Questionnaire (NOSIE). In the CRI, Ss were asked to indicate how they have been coping with urges to drink; we hypothesized that how Ss have coped with drinking urges would be associated with short-term smoking status following a quit attempt. Preliminary findings based on bivariate regression analyses indicated that higher FTND scores (p<.027; Odds Ratio: 0.57, 95% CI: 0.35-0.94), lower cognitive avoidance scores on the CRI (p<.017; Odds Ratio: 0.85, 95% CI: 0.74-0.97) and lower anger scores on the WPSVS (p<.05; Odds Ratio: 0.76, 95% CI: 0.59-1.00) were the strongest predictors of successful quitting. Findings are consistent with prior studies of smoking abstinence and alcohol treatment. The poster presentation will present detailed findings, including multivariate analyses, based on a sample of 60-70 Ss.

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POS2-89

REGULAR EXERCISE AS A PROTECTIVE FACTOR IN RELAPSE FOLLOWING SMOKING CESSATION TREATMENT

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Previous research studies have shown that smokers are generally less physically active than nonsmokers. While exercise interventions have been developed to help smokers quit, very little is known about smoking cessation outcomes of smokers who already engage in regular exercise (vs. those who are sedentary) prior to participating in a non-exercise based cessation treatment. In this study, 524 smokers (49.5% female, mean age=44.7years) participated in a 12-week randomized, double-blind, placebo controlled 2x2 clinical trial comparing: (a) standard smoking cessation treatment (ST) plus bupropion SR (BUP); (b) ST plus placebo; (c) ST plus CBT for depression plus BUP; and (d) ST plus CBT for depression plus placebo. Baseline smoking characteristics were examined for participants who identified themselves as regular exercisers versus those who reported not exercising regularly. In addition, Generalized Estimating Equations (GEE) were used to examine weekly abstinence in the year following quit date for exercisers and nonexercisers. Only 27.6% of the sample reported exercising regularly. At baseline, exercisers, compared to nonexercisers, reported smoking fewer cigarettes per day (p<.01), considered themselves less addicted to smoking (p<.05), reported lower smoking urges (p=.05), and were less depressed (p<.05). In the GEE model with the linear effect of time, exercise, treatment condition, and covariates, there were significant time by bupropion (p<.001), time by exercise (p<.05), and exercise by bupropion (p<.05) interactions. Thus, rates of abstinence for participants who took bupropion compared to those who did not were higher by the end of the year. Independent of treatment condition, those who did not exercise regularly relapsed significantly earlier than exercisers during the year. Lastly, among smokers receiving placebo, abstinence rates were significantly higher for participants who exercised versus those who did not exercise. Findings will also be presented on potential mediating mechanisms of exercise on smoking outcomes. Overall, these findings suggest that regular exercise may be an important protective factor in smoking relapse.

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POS2-90

COMPARISON OF SALIVARY AND URINE COTININE TO EXPIRED CO AS BIOMARKERS OF ABSTINENCE FROM SMOKING

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Previous data (Liss et al., 2006) has demonstrated that semiquantitative urinary cotinine levels provide a valid method, once cessation has been achieved, to monitor continued abstinence from smoking in adolescent smokers. This is particularly relevant in contingency management (CM) cessation trials, since the longer half-life of cotinine (18 hours) allows for fewer daily appointments to biochemically verify abstinence than does verification using carbon monoxide (CO; half-life of 2 hours). Urine samples can be difficult to obtain, especially non-clinic settings, and participants and research personnel often dislike handling urine samples. Hence, salivary cotinine can be used to assess abstinence. While semiquantitative urinary cotinine levels have been shown to be both sensitive and specific in adults (Acosta et al., 2004; Hobbs et al., 2005) and adolescents (Liss et al., 2006) following the first few days of a quit attempt, no research was found that investigated either the validity of salivary cotinine or relationships between expired CO and cotinine markers. This abstract analyzes 17 days of objective compliance to smoking abstinence in a CM and compares expired CO, urine and salivary cotinine levels. Data were correlated for each participant using Spearman’s Rank Correlation. Urine and salivary cotinine demonstrated a significant correlation (r=.001), accounting for 74 percent of sample variability; exhaled CO was significantly (p<.001) but less robustly correlated with the cotinine markers (r=.67; assuming normal distribution). The smaller correlations between CO and the two cotinine measures are likely to be due to the differences in half-life. Salivary cotinine was more sensitive to abstinence (using CO as a comparator) than urinary cotinine during the whole trial (saliva=91.2%; urine=74.9% sensitive) and following the first 4 days of a quit attempt (saliva=98.4%; urine=92.9% sensitive). Both were 100% specific, but the small measurement group (n=57) made conclusions difficult to draw. These findings demonstrate that salivary cotinine can serve as a primary measure to confirm abstinence in adolescents.

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POS2-91

MOTIVATION TO QUIT AS A PREDICTOR OF SMOKING CESSATION AMONG PRIMARY CARE PATIENTS: A MULTIVARIATE ANALYSIS

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Motivation to quit is an important factor in the process of smoking cessation. Stage-based measures and interventions have been studied extensively, and more recently have been criticized for inconsistent performance in predicting cessation. The current study examined the capacity of a stage-based measure to predict abstinence among smokers taking part in a brief, stage-based primary care smoking cessation intervention. Participants (n = 465) provided baseline smoking information, including a version of the contamination ladder, a measure of motivation to quit. In addition, nicotine dependence, past quit attempts, and duration of longest quit attempt, were assessed at baseline. Abstinence and quit attempts were assessed 6-months post intervention. Results at baseline revealed the following distribution of smokers: 33% were already making changes in their smoking, 17.4% had a time-specific plan to quit, 42.5% were contemplating cessation with no specific plan, and 6.9% rarely or never thought about cessation. The contamination ladder was a significant predictor of cessation (p <.02). Post-hoc analyses revealed that the key distinction made by the contamination ladder was between those who were planning to quit or already changing behavior, as compared to those who were only considering cessation without any plans (p<0.001). Moreover, participants who quit contemplative items varied particularly in cessation rates, number of quit attempts, and duration of longest quit attempt during the six-month follow-up period (all ps <.002). Baseline nicotine dependence, quit attempts, and quit duration, also were significant predictors of cessation. Finally, although the contamination ladder was an independent predictor of cessation, its predictive capacity was diminished when the other cessation-related variables were included in multivariate analyses.

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In a previous investigation (Swan et al., 2003), we reported that scores on the Fagerström Test for Nicotine Dependence (FTND) were predictive of 12-month smoking status following treatment for smoking cessation with bupropion in men but not in women. Since then, the heritability of components of the FTND has been reported (Lessov et al., 2004) with a substantial amount of additive genetic variance in responses to the two items of the Heaviness of Smoking Index: (1) time to first cigarette (TFC) after awakening, and (2) cigarettes smoked per day. The purpose of the present analysis was to examine the predictive utility of the individual items of the FTND as well as other indices of dependence including quitting history and subjective reactions to the first cigarette of the day for 12-month smoking separately for men and women. The sample included 1523 participants (848 males, 675 females, mean age=44.5 yrs) taking 150 or 300 mg of bupropion and receiving proactive telephone cessation counseling. For these analyses, TFC was treated as a dichotomous variable (within five minutes vs. greater than five minutes). In men, multiple stepwise logistic regression determined that TFC (smoking within five minutes of awakening; adjusted OR=1.92), a previous quit attempt of less than six months duration (OR=1.67), and smoking even when ill (OR=1.42) were risk factors for 12-month smoking status (all p<0.05). In women, risk factors for 12-month smoking status included a previous quit attempt of less than six months duration (OR=1.92; CI 1.199-3.12). Racial discrimination was also associated with increased odds of smoking (OR 1.52; CI 1.090-2.125). Further analysis and implication of findings for smoking cessation programs will be discussed.

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A growing but still mixed body of research suggests that smoking behavior, withdrawal, and craving may vary across the menstrual cycle and that the premenstrual, i.e., luteal phase of the cycle may be associated with increases in withdrawal and craving. The clinical implications of this relationship rest on the need for focused cessation treatment during the luteal phase and/or quit attempts that are well timed relative to specific menstrual phases. In this pilot feasibility study, we randomized 45 adult female smokers ages 18-40 who were not currently using hormonal contraception to quit smoking during either the follicular (days 2 through [avg cycle length minus 18]) or luteal phase (days 6-13 post LH surge) of their menstrual cycle. The luteal phase (n=20) was verified via a self-monitoring kit (Clearblue Easy Fertility Monitor), and the follicular phase (n=25) was verified by self-report in conjunction with sham hormonal testing to equate for monitoring procedures. Participants were provided with two sessions of smoking cessation counseling (90min total), one prior and one post target quit date. Additionally, all participants were provided with transdermal nicotine patch contingent upon maintenance of abstinence throughout the course of the six week study. Using an intent-to-treat analysis, CO-verified point prevalence abstinence rates at 1, 2, 4, and 6 weeks following the target quit date were 28% vs. 25%, 32% vs. 20%, 12% vs. 15%, and 8% vs. 10%, for follicular vs. luteal groups, respectively (all n.s.). These preliminary data suggest that initial success (i.e., within two weeks of a quit attempt) may be greater when women quit smoking in the follicular phase of their cycle. If supported by future, larger studies, these data may inform decision-making about treatment for women smokers.

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POS2-96

‘SOME OF THESE WORDS I CAN’T PRONOUNCE’: THE READABILITY OF SELF-HELP MATERIAL FOR QUITTING SMOKING

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Interest in health literacy has raised concerns regarding the readability of patient information and health promotion literature. Many self-help materials offering help to the intending quitter are written at a level beyond the literacy skills of many smokers, leading to an ever-growing socio-economic gradient in smoking. Computer programs designed to tailor self-help information to personal characteristics can also take into account individual features such as level of education and socio-economic circumstance. The aim of this research was to adapt material by tailoring communications to the reading and educational levels of lower socio-economic groups where smoking prevalence is higher, and to explore the suitability of the materials for individuals from different educational backgrounds. Methods: In consultation with literacy experts, tailored feedback was adapted to appropriate levels of readability for smokers of all educational levels. The acceptability and relevance of the adapted materials was explored in focus groups with smokers from various backgrounds. Results: Observations about current self-help material confirmed that it is written at too high a level. Comments emphasised the need for clarity and attractiveness, and also highlighted the importance of maintaining a professional style, with appropriate language to retain credibility through a professional approach. Conclusion: Tailoring to an appropriate literacy level is acceptable, but good presentation and an attractive layout is of paramount importance for smokers of all reading levels.

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POS2-97

SPOUSES ARE MORE SUCCESSFUL QUITTING TOBACCO TOGETHER

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Marital status and smoking status among spouses has been associated with continued smoking and cessation. Having a partner who dislikes smoking is associated with quit attempts (West et al., 2001) and living with an ex-smoker or never smoker increases the likelihood of quitting (Monden et al., 2003). To date, no study has examined quitting among spouses enrolled together in a cessation program. An organization offered a phone-based tobacco cessation program (up to 5 calls over 6 months) for their employees and spouses/partners. We analyzed quit rates among employees and spouses enrolled in the program alone versus enrolled in the program together at the same time. Between 2004 and 2005, 316 employees and/or their spouses enrolled in the program. Of these, 292 (80%) enrolled alone and 74 (20%) enrolled together. Demographics, tobacco use and dependence were measured at intake. Quit status (7-day point prevalence and 30-day prolonged abstinence) was assessed at one year. 61% completed the 1-year follow-up survey. Descriptive statistics were generated and a Chi-square analysis was conducted to compare quit outcomes by group. 55% of enrollees were female; 84% of enrolled spouses were female vs 43% of enrolled employees. Average age across groups was 46 years (range 18 to 72). Nearly all participants reported smoking cigarettes (98%); few reported other forms of tobacco use (1.4% cigars, 2.2% smokeless, 0.3% pipe). Enrollees smoked on average a little less than a pack of cigarettes. The majority of smokers (76%) had their first cigarette within 30 minutes of waking. Responder quit rates (7-day point prevalence) were significantly higher among spouses quitting together versus employees or spouses enrolled alone (43% vs 25%, respectively, p<.05). Intent to treat quit rates also were significantly higher (26% vs 15%), 30-day quit rates were higher among employees and spouses quitting together than alone (35% vs 24%), however, the results were not statistically significant. This work extends our understanding of social influences on tobacco cessation and the value of spouses seeking assistance in quitting tobacco together.

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POS2-98

CUMULATIVE RESISTED CUE EXPOSURES PREDICT RESISTING SMOKING WHEN CIGARETTE ARE AVAILABLE

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Pavlov and others have suggested that drug administration could be considered a conditioning trial. The unconditioned stimulus (US) is the drug effect (e.g., the effect of nicotine) and the conditioned stimulus (CS) is an environmental cue (e.g., an available cigarette) occurring before the drug is administered. Extinction in the classical conditioning paradigm requires that the CS be presented in the absence of the US. This suggests that smokers who are attempting cessation will be more likely to resist smoking to the extent that they have been exposed to unreinforced environmental cues to smoke. This study tests the hypothesis that during a cessation attempt the number of times one has previously not smoked in the presence of environmental smoking cues will be associated with less likelihood of lapsing in the presence of those cues. Sixty-one smokers attempting cessation used palm-top computers to report on resisted temptations, lapses, and randomly assessed nontempts for two weeks. For each episode, the cumulative number of prior episodes (either resists or random assessments) during which a smoking cue did not lead to smoking was calculated. Four types of cues were examined: easily available cigarettes, the presence of others smoking, environment allowed smoking, and the situation was a usual smoking situation. Multilevel logistic regression used to control for dependency in the data showed that in the 1045 episodes in which cigarettes were easily available, the number of times one had resisted smoking easily available cigarettes in prior episodes was significantly and inversely related to lapsing (OR=0.75, CI 631.0, 0.894, p=.002). This relationship remained significant when time since quitting, and concurrent assessments of negative affect, rebellious state, and urge level were controlled. Cumulative effects of other environmental cues did not significantly predict lapsing/abstaining. Because available cigarettes consistently lead to lapsing, quitters are advised to avoid them. These findings suggest that experience resisting cigarette cues is needed in order to remain abstinent when cigarettes are available.

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POS2-99

CHANGES IN CIGARETTE USAGE AFTER SUBSTANCE ABUSE TREATMENT

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Cigarette smoking rates are extremely high among substance abuse clients. InstANCES of smoking cessation interventions during the substance abuse treatment resulted in mixed success for nicotine abstinence. Little is known about how smoking behavior changes as a result of the substance abuse treatment intervention alone. This paper is based on data collected at the time of intake and at 6-month follow-up from a sample of 1,299 clients who participated in publicly funded drug and alcohol treatment programs between July 2004 and December 2004 in Tennessee. 94% (n=952) of those (n=1018) reported smoking cigarettes at intake were still smoking at follow-up and 6% (n=61) reported quit smoking. For those still smoking (n=952), the factors related to the frequency of smoking included treatment for polydrug abuse (p=0.01), poor self reported health status (p=0.001), having a spouse or other relative who abused substances during the last 6 months (p=.02 and p<.0001, respectively), and residing in the Appalachian region of the state (p<.0001). Factors related to a reduction in the rate of daily smoking at the time of 6-month follow-up were: completion of substance abuse treatment (p=0.02), ethnicity, (African American vs. White, p=0.04), and being married at intake and at 6-month follow-up (p=0.03 and p=0.01). Among current smokers (n=952), the strong predictors of substance abuse recidivism (30% smokers vs. 27% for non-smokers) was nicotine dependence (OR=1.34, p<.01), years smoking (OR=1.03, p<.006) and their interaction (OR=1.989, p=0.03). These results indicate that substance abuse treatment positively affects a small percentage (6%) of smokers in helping them quit smoking. In addition, nicotine use appears to be directly linked to substance abuse treatment outcomes and should be explored further in future studies.

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POS2-100 ADHERENCE TO LONG TERM, DISEASE MANAGEMENT FOCUSED TOBACCO COUNSELING

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Introduction: For many addictions, engagement in treatment is a critical factor in eventual success. This study describes adherence to behavioral counseling for smoking cessation over time.

Methods: As part of a larger randomized-controlled trial of disease management for smoking cessation, 251 rural smokers received up to 6 telephone-based counseling sessions at six-month intervals over 24 months to encourage smoking cessation. The number of calls completed during each six-month interval was used as the response variable. Only time periods for which surveys where a respondent reported continued smoking were used to evaluate adherence. Calls completed were modeled as a function of time using a mixed model.

Results: At the time of this analysis, 38 of the 251 subjects completed the study, and 192 had completed at least one survey period. Out of 251 participants, the majority are under 50 years of age (M=46.42, SD=13.45), female and employed. Almost half of the sample had some education beyond high school. The majority of our sample was highly motivated (M=8.62; SD=2.02) and somewhat confident (M=6.32; SD=2.56) of their ability to quit smoking. Although 96% of subjects completed at least one call during each 6 months cycle, call completion varied over time with an average of 3.25, 2.12, 2.18 and 2.44 calls during the 1st, 2nd, 3rd and 4th cycle, respectively. The mixed model indicated a significant quadratic effect of time predicting call adherence (p<0.0001).

Conclusion: These results suggest that despite some initial decline in participation, after the first 6 months, smokers continued to engage in treatment over the next two years.

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POS2-101 SAFETY AND TOXICITY OF CYTISINE

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Cytisine is a naturally occurring substance that can be found in the seeds of several different plants around the world, including sophora secundiflora, kalina latifolia, and cytisus scoparius. Given the similarity of cytisine to nicotine, and its agonist effect at nicotinic receptors, it would be expected that potential negative effects of ingesting cytisine would include nausea, abdominal pain, vomiting, respiratory depression, and other symptoms similar to nicotine effects. In fact, clinical studies that used cytisine for smoking cessation and clinical reports of human intake of seeds containing cytisine confirm those effects. Reports of fatalities due to cytisine intake are extremely rare. A review of cytisine effects will be presented and compared with similar agents (e.g., nicotine), and implications regarding the use of cytisine as a clinical agent for smoking cessation will be discussed.

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POS2-102 HUMAN NICOTINIC RECEPTOR PHARMACOLOGY OF CYTISINE AND VARENICLINE

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Cytisine is a partial agonist (less than 100% of the efficacy of acetylcholine) at human nicotinic acetylcholine receptors (nAChR) composed of alpha4 and beta2 subunits (alpha4 beta2-nAChR) that are abundant in the brain. Cytisine has higher efficacy but lower potency at autonomic alpha3 beta4-nAChR, and it has even lower potency, but full efficacy, at muscle-type nAChR. At all three, human nAChR subtypes, cytisine and nicotine are about equipotent. Thus, cytisine can be classified as an alpha4 beta2-nAChR-selective, partial agonist. Varenicline also is an alpha4 beta2-nAChR-selective, partial agonist, but its potency difference between alpha4 beta2- and alpha3 beta4-nAChR is smaller than for cytisine. Moreover, both ligands have higher potency at alpha4 beta4-nAChR than at alpha4 beta2-nAChR, which could contribute to nicotine dependence. Strikingly, both cytisine and varenicline have activities as alpha4 beta2-nAChR antagonists at concentrations lower than those needed to activate alpha4 beta2-nAChR function. Simple modifications of cytisine can cause dramatic changes in its nAChR subtype profile. These findings have implications for nicotine dependence, its development, and its treatment.

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POS2-103 CYTISINE FOR SMOKING CESSATION: A LITERATURE AND META-ANALYSIS

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Background: Cytisine is an agonist of nicotinic receptors, and in particular it binds strongly with alpha4-beta2 nicotinic receptors. Cytisine has been used to treat tobacco dependence for 40 years in Eastern Europe.

Objective: To review the literature on the effect of cytisine on smoking cessation.

Data sources: Review of PubMed, Embase, Psychological Abstracts, Biosis, Google.com and Scholar.google.com, using the keywords cytisine, cytisin, cytisine, tabex and smoking cessation. Experts and the manufacturer of Tabex were contacted. Placebo-controlled trials were included in a meta-analysis.

Results: Ten studies reported the effects of cytisine on smoking cessation, including 4 controlled studies (3 placebo-controlled). Nine studies used the Bulgarian drug Tabex, containing 1.5 mg cytisine per tablet, and one Russian study used buccal films containing either 1.5 mg cytisine or 0.75 mg cytisine plus 0.75 mg anabasine. All studies were published between 1967 and 2005 in Bulgaria, Germany, Poland and Russia. There were 4404 smokers treated with cytisine and 3518 smokers in control conditions. The pooled odds ratio after 3-8 weeks in the 3 placebo-controlled trials (two were double-blind and one was randomized) was 1.93 (95% confidence interval 1.21 to 3.06). For the 2 placebo-controlled, double-blind trials with longer follow-up, the pooled odds ratio after 3-6 months was 1.83 (1.12 to 2.98). One placebo-controlled, double-blind trial had follow-up after 2 years (odds ratio=1.77, 1.29 to 2.43). Some side effects were reported. Most trials were however of poor quality.

Conclusions: Cytisine may be effective for smoking cessation. This fact remained largely unnoticed in the English-language literature.

No funding.

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POS2-104 RESULTS OF THE POLISH CYTISINE STUDY: AN OPEN LABEL OBSERVATION

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Cytisine (Tabex) has been licensed in Poland (and other former socialist economy countries) as an aid to smoking cessation for 40 years, and has gone largely unnoticed by the West. Cytisine is a plant extract from cytisus laburnum. It is a nicotinic partial agonist binding with high affinity to a number of different subtypes of the neuronal nicotinic receptors, including receptors composed of alpha-4 and beta-2 subunits that are believed to be central to the effect of nicotine on the reward pathway. Phase I studies show that cytisine has pharmacological effects that are somewhat similar to those of nicotine. Its toxicity is broadly similar though somewhat less. However there is insufficient information on safety and efficacy of cytisine by modern standards. For all these reasons we started the series of studies on cytisine. First we conducted an open label observational study to obtain systematic data on abstinence rates and side effects with Tabex in clinical use as a prelude to undertaking a randomised trial. 436 consecutive patients of the smokers’ clinic of whom 191 were males, were observed. The mean dependence score (Fagerstrom Test for Nicotine Dependence) was 6.1. The standard regimen of Tabex was used, as specified by manufacturer, involving 25 days of treatment with minimal behavioural support. Self-reported abstinence for 12 months was found, with abstinence verified by CO at the final follow up (after 12 months). 60 patients (13.8% of the total sample) were abstinent for 12 months. Of the 315 patients, who had taken the drug, 49 (15.5%) stopped due to adverse effects, although they were not serious. The frequency of the minor adverse effects, primarily gastric disturbance, was similar to that observed in previous studies with the drug. The self-reported 12-week and follow up after 12 months successful rates were high, especially given the lack of behavioural support. Herbal cytisine could make a major contribution to smoking cessation worldwide, particularly in less affluent countries. A large-scale randomised trial is needed.

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POS2-105 IDENTIFYING SMOKERS WHO ARE NAIVE TO PHARMACEUTICAL QUIT AIDS

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Pharmacologic aids to smoking cessation have been heavily promoted or made increasingly available. In Ontario, Canada, bupropion has been available by prescription for smoking cessation since 1998 and nicotine replacement therapy (NRT) patch and gum have been available without prescription since 1999. This analysis seeks to characterize never users in relation to smoker characteristics and factors related to the appropriateness of these pharmacotherapies. Data were compiled on 1517 recent smokers from the first two waves of the cross-sectional component of the Ontario Tobacco Survey, a regionally-stratified RDD survey conducted between 2005/06 in Ontario (response rate=64%). Lifetime exposure to NRT, bupropion and non-pharmacological quit aids such as acupuncture, counseling and self-help materials were compared across demographic and health-related characteristics. Men (56%) and younger adults (34%) were less likely to have ever used NRT or bupropion (p<0.05), however there was no association with 6-month quit intention. When controlling for age and sex, education was not associated with naïvete of NRT or bupropion, however, least educated smokers were less likely to have used non-pharmacological quit aids (p<0.001). Although there were no urban/rural differences for use of NRT, there was a trend toward less bupropion exposure in larger communities. Smokers reporting their health as excellent were less likely to have used NRT (p<0.05), and those in excellent to fair health were less likely to have used bupropion and other quit aids (p=0.05 and p=0.001, respectively). Smokers perceiving themselves as “not at all” addicted to cigarettes were naïve to NRT, bupropion and other quit aids (p=0.05), while smokers with low HSI scores were naïve to NRT and bupropion (p<0.001). Many smokers in Ontario continue to have never used pharmacotherapies for smoking cessation. Arguably, access is not the explanation as education and regional differences were not identified. We will also discuss naïvete of NRT and bupropion for smokers most likely to be recommended these products. Further research is necessary on internal barriers to use, perceptions of efficacy, and appeal. The Ontario Tobacco Survey is an initiative of the Ontario Tobacco Research Unit, which receives funding from the Ontario Ministry of Health Promotion and the Ontario Ministry of Health and Long-Term Care.

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POS2-106 PARTICIPANT GUESS ABOUT RANDOMIZATION AND OUTCOME IN A BUPROPION SMOKING CESSATION TRIAL

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Few smoking cessation trials have assessed participant guess about randomization, whether this guess relates to outcome, or mechanisms for formulating this guess. In a randomized placebo-controlled bupropion smoking cessation trial, we assessed participant guess about treatment arm assignment, the correlation between this guess and cessation, and whether side effects and changes in nicotine withdrawal symptoms or mood mediate this relationship. At a 12-month follow-up, 498 subjects indicated whether they thought they received bupropion, placebo or were unsure. Side effects, withdrawal symptoms and mood were measured during treatment and 7-day point prevalence cessation was assessed at the end of treatment (EOT) and at 8- and 12-months post quit date. Across bupropion and placebo arms, 55% of subjects correctly guessed randomization, 17% were unsure, and 28% guessed incorrectly. Compared to guessing unsure, those who guessed they received bupropion were more than twice as likely to have been randomized to bupropion, while those who guessed placebo were half as likely to have been randomized to bupropion. Treatment arm guess significantly predicted cessation (OR=1.48 [1.18-1.84]) and including treatment arm guess with actual treatment arm in cessation models significantly reduced the odds ratio for bupropion at EOT (from 1.98 to 1.64), 6-months (from 1.83 to 1.51), and 12-months (from 1.46 to 1.20). Proposed mediators were not significant. In bupropion smoking cessation trials, participants may correctly guess treatment arm assignment and this guess may influence cessation.

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POS2-107 DOES FUNDING SOURCE INFLUENCE OUTCOMES IN SMOKING CESSATION RESEARCH? A META-ANALYSIS OF BEHAVIORAL AND PHARMACOLOGICAL TREATMENTS

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Rationale: A recent meta-analysis used declared conflicts of interest to demonstrate that treatment outcomes for NRT were more favorable when pharmaceutical companies funded the research in whole or in part. Methods: This study extracted data from studies reported in 7 Cochrane reviews (anxiolytics, bupropion, NRT, group counseling, individual counseling, self help, telephone counseling), and combined it with self report surveys from the study authors to examine the potential impact of private, public, and non-profit funding on treatment outcomes. Survey data were used to confirm, extend, and revise published reports of funding support. In order to establish a potential temporal sequence, only funding received prior to publication of a given study was included. Results: 250 articles were extracted and coded. Studies of pharmaceutical treatments were more likely to receive private sector funding. For NRT, receipt of private sector funds consistently increased the likelihood of finding a significant treatment effect and the size of the pooled odds ratios. Private sector support also increased the effect size of trials for anxiolytics, bupropion, and self help. Exclusive private sector funding had a larger effect than receipt of funding from a mix of private and public/non-profit sources. Private sector involvement reduced the effect size of individual counseling trials. Effects remained even after controlling for differences in methodological quality. Funnel plots for NRT suggested that some studies with lower effect sizes could not be published. Discussion: Results confirm and extend previous studies. The receipt of funding from the private sector appears to inflate the subsequent likelihood of finding a treatment effect and the size of the treatment effect for pharmaceutical. Private sector funding may have the opposite effect on behavioral interventions. Future meta-analysis and clinical guidelines should consider this potential source of bias.

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**POS2-108** FINANCIAL CONSEQUENCES OF LONG-TERM SMOKING CESSATION

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Aims: To use longitudinal data from a representative national sample in Australia to examine the association of long-term smoking cessation with the subsequent likelihood of experiencing financial stress and level of material well-being.

Design and participants: Data came from waves 1, 2 and 3 (2001-2004) of the Household Income and Labour Dynamics in Australia (HILDA) survey. The size of the subsample of smokers in wave 1 who also participated in waves 2 and 3 was 1,747. We compared respondents who reported to have been a smoker in all three waves with those who were a smoker in wave 1, but who quit in wave 2 and who remained quit in wave 3.

Measurements: Eight questionnaire items (e.g., difficulty paying electricity, gas or telephone bills, and going without meals) were used to construct a binary financial stress indicator. Material wellbeing was measured with a single item scored 1 (very poor) through 6 (prosperous).

Findings: The odds of experiencing financial stress in wave 3 was 42% (95% CI: 6 to 74%; p=0.028) smaller for quitters than continued smokers. Being a quitter was associated with an increase of 0.14 (95% CI: 0.02 to 0.26; p=0.025) units of material wellbeing in wave 3.

Conclusions: The findings provide additional incentives for smokers to quit and as such can be used in anti-smoking campaigns and by smoking cessation services and counsellors to communicate the benefits of quitting. The findings also suggest that public health interventions that result in a higher rate of smoking cessation are likely to improve standards of living and reduce deprivation.

This research was supported by a grant from the Victorian Health Promotion Foundation (VicHealth). We would like to thank Adrienne Brown for her research assistance. The data came from the Household Income and Labour Dynamics in Australia (HILDA) survey, which is funded by the Department of Family and Community Services (FaCS) and conducted by the Melbourne Institute for Economic and Social Research at the University of Melbourne. The research findings are the product of the researchers and the views expressed should not be attributed to FaCS or the Melbourne Institute.

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**POS2-109** TOBACCO CESSATION RESEARCHERS’ ATTITUDES TOWARD PUBLIC, PRIVATE, AND NON-PROFIT FUNDING AND SPONSORSHIP OF TOBACCO RESEARCH

Paul McDonald, Ph.D.*, and Fathima Moola, M.Sc., Population Health Research Group, University of Waterloo

Rationale: Recept of private sector funding may systematically influence research outcomes. To explain possible reasons for this effect, this study examined the attitudes and behaviors of smoking cessation researchers regarding funding from public, private, and non-profit organizations.

Methods: Authors on one or more studies in Cochrane reviews for anxiolytics, bupropion, NRT, group counseling, individual counseling, self help, or telephone based counseling were initially identified. Eligible participants completed a web-based survey which included demographics, service on an expert review expert panel for tobacco cessation, receipt of various types of financial support from public, private and non-profit organizations, and attitudes towards financial support from various sectors. Respondents also described their role and influence in each study listed in the designated Cochrane Reviews, as well as any financial support.

Results: 67.1% (n=143) of survey recipients completed the questionnaire. First authors were more likely to respond. 39% of respondents had served on expert panels, a rate unaffected by the type of financial support received. Reimbursement for travel, receipt of an honorarium or consulting fees from the private sector was common (>33%) but did not influence research outcomes. However, funders from the private sector were more likely to fund pharmaceutical treatment research relative to behavior treatments, and more likely to be involved in the study design. Recipients of private sector research funds were less likely to agree that pharmaceutical funding influences researchers. About half of respondents felt it was acceptable for organizations of tobacco control conferences (e.g., SRNT) to accept money from pharmaceutical companies.

Discussion: Receipt of private sector funding for research or personal support is a common, particularly those involved in pharmaceutical trials. Private sector funders may be exerting influence on study design and subtly altering researcher attitudes toward these sponsors. More public discourse is urgently required.

Funding was provided by the Heart and Stroke Foundation of Ontario.

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**POS2-110** REIMBURSEMENT PROGRAM OF PHARMACOLOGICAL AIDS FOR SMOKING CESATION: AN EVALUATION OF THE QUEBECEXPERIENCE

Sylvia Kairoz, Ph.D.*, Concordia University and Quebec National Institute of Public Health; Louise Guyen, M.Sc., Annie Montreuil, Ph.D., and Yves Payette, M.Sc., Quebec National Institute of Public Health

Pharmaceutical aids remain one of the most efficient tools for smoking cessation (Fiore et al., 2000; Silagy et al., 2004; Woolcott et al., 2002). In 2004, 44% of smokers in Quebec used some kind of pharmacological aid; of those, 76% considered that patches helped them quit smoking whereas 49% and 27% declared so for bupropion and nicotine gums respectively (CTUMS, Statistics Canada, 2004). Moreover, smokers using one of the three types of pharmacological aids (patches, gums and bupropion) were 1.5 to 1.9 times more likely to stop smoking compared to non-users. Over the last 5 years, the Ministry of Health and Social Services of Quebec implemented a multi-functional comprehensive tobacco control legislation targeting points of sale, promotion of tobacco products, along with the protection of population from exposure to environmental tobacco smoke (ETS). Simultaneous initiatives were launched to support smoking cessation namely the Nicotine Replacement Therapy reimbursement plan with an estimated cost of 55 million dollars between 2000 and 2004. In 2006, a multidimensional evaluation program of NRT reimbursement plan was set forth based on the analysis of three major sources of information: (1) administrative data from the Quebec health insurance registry; (2) data from nicotine replacement practitioners in Quebec (N=1 622); and (3) data from a national survey conducted among smokers and former smokers in Quebec (N=2 736). The triangulation of data from these diverse sources provides a thorough analysis of: (1) the notoriety of pharmacological aids; (2) patterns of use; (3) reasons of use and non use; (4) perceived effectiveness as well as (5) perceived impact of the reimbursement plan on the likelihood of using NRT and on smoking cessation. Preliminary results reveal that pharmaceutical aids remain under-used despite their notoriety and their full reimbursement in Quebec. However, those who made use of these aids consider them helpful for quitting. Our results conclude on the need to enhance concerted actions among various stakeholders to promote the use of pharmaceutical aids when smoking cessation is pursued.

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**POS2-111** THE IMPACT OF INCREASED PHONE CONTACT AND MEDICATION SUPPORT AROUND THE QUIT DATE: INITIAL RANDOMIZED TRIAL RESULTS


Telephone cessation counseling has a well-established evidence base, with a dose-response associated with follow-up calls. Quit rates have not improved over the past decade. However, dosing trials have generally not exceeded 6 calls. We conducted 1-hour structured interviews with 15 leading scientists and clinicians to assess how to achieve higher quit rates. Common themes included intensifying treatment during early stages of quitting, and greater cessation medication support including side-effect management and use of dual nicotine replacement. We created a higher-intensity phone program, and randomized 602 tobacco users to receive usual care (a 3-month 5-call phone program with standard medication support) or the intense program. The intense program included up to 9 calls in the first month, with 6 calls delivered during the quit week, including a pre-quit date coaching session. Usual care received up to 3 calls the first month, with no pre-quit date coaching call, and only one during the quit week. Quit coaches providing the intense intervention received additional training on medication support, including potential use of ad lib nicotine gum or lozenge, in addition to the patch. Quit coaches sent personalized follow-up e-mails for 4 calls in the intense program. All participants were surveyed one month post quit date, with 81% of usual care and 76% of intensive intervention response rates. Seven-day responder quit rate was 56% for usual care and 72% for intensive (P=0.05). Intent-to-treat quit rates were 46% and 54%, respectively (P=0.06). Among responders, use of medication did not differ between groups (85% vs 89.3%; P=0.4), but the intense group was twice as likely to use two medications (11% vs 22%, P=0.007). The effect size difference was larger for callers <40 years old (21% absolute difference vs 13%). Males and females benefited equally. Participants in the intensive group completed an average of 6.4 calls. Those completing more calls had higher quit rates (1-2 calls: 46%; 3-5 64%; 6-9 82%). Trial results suggest that more intense contact with focused cessation coaching increases short term quit rates. 6-month follow-up is underway supported by Free & Clear.

POSI2-112
DOSE-RESPONSE IN TELEPHONE COUNSELING FOR SMOKING CESSATION: SIX-MONTH EFFECTS OF VARYING THE NUMBER AND DURATION OF COUNSELING SESSIONS AND CURRENT MOOD

Vance Rabius, Ph.D.*; K. Joanne Pike, MA, LPC, Joseph Hunter, BA, Dawn Wiatrek, Ph.D., American Cancer Society; and Alfred McAlistier, Ph.D., University of Texas-Houston, School of Public Health

To evaluate the effectiveness of variations in the number and duration of smoking cessation counseling sessions provided via telephone, the American Cancer Society conducted a randomized trial with 6,322 clients. In a three-by-two experimental design, clients were randomized to receive self-help booklets and to have access to one of three counseling protocols and, within each of those groups, to have access to counseling with or without two additional “booster” sessions, lasting 15 minutes each, one and two months after the main sessions were concluded. To test the overall counseling effect, a proportion of study participants were randomized to receive self-help booklets only. The three counseling protocols were (1) the American Cancer Society Quitline standard five session counseling protocol (210 minutes total), (2) three sessions with a total duration equivalent to one-half of the five session standard protocol (105 minutes total), and (3) five brief sessions with duration of approximately ten minutes each (50 minutes total). Six-month follow-up interviews were attempted for all study participants with a response rate of 51%. Results show a significant overall counseling effect (p<.01). The standard five-session and the five brief with booster protocols were also significantly more effective than the five brief without boosters or the three-session protocols (p<.05). Overall, booster sessions significantly increased quitting rates (p<.05), but this was due to the effect size for the five-session brief group. Subgroups analyses based on current mood showed that 46% of clients reported a depressive mood at baseline and that these differential effects of counseling protocol and boosters were concentrated in that group. The group (54%) who did not report a depressive mood at baseline did equally well with access to any protocol, with or without access to boosters. These findings suggest that a protocol with more, brief counseling sessions may be as effective as one with three times the duration.

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POSI2-113
QUITLINES IN NORTH AMERICA: COMMONALITIES AND DIFFERENCES

Sharon Cummins, Ph.D.*; Linda Bailey, J.D., M.H.S.; Carrie Koon-Kirby, M.S.; Sharon Campbell, Ph.D., and. Shu-Hong Zhu, Ph.D.*; Cancer Center, University of California, San Diego, Cancer Center, 9500 Gilman Drive MC0905, La Jolla, CA POS2-113

Throughout North America, tobacco users who want to quit have near-universal access to cessation services through state and provincial quitlines. These telephone-based programs share one feature: they are highly centralized operations, making it much easier to monitor their performance than normally possible with behavioral services. Moreover, a consortium, the North American Quitline Consortium (NAQC), was formed in 2004 to create a forum to facilitate the collaboration among quitline service operators, funders, and researchers. This study assesses the practices of these quitlines by conducting a survey of existing quitlines through NAQC. The survey aims to help the members of NAQC to use common definitions of terms (e.g. multiple proactive counseling) and gather information about the organization, funding, delivery of quitline services, and outcome evaluation. The study found that there is remarkable consistency among quitlines with regard to types of counseling services and the clinical oversight provided. It also found almost all quitlines conduct outcome evaluation regularly and on an ongoing basis, which keeps these services on a high level of accountability. Funding sources differed between the U.S. and Canada as did the types of providers of the counseling service (e.g., university/medical center, commercial enterprise). Detailed information about the range of quitline practices and the levels of their funding and the sources of funding will be presented. The role of these quitlines in the larger context of population-based approach to cessation will also be discussed.

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POSI2-114
STATE QUIT LINES REACH A LARGE PROPORTION OF LGB TOBACCO USERS

Terry Bush*, Beatrice Carlini, Lisa Mahoney, Susan Zbikowski Free and Clear, Inc.

Lesbian, gay and bisexual (LGB) communities have a higher prevalence of smoking and a tendency to under use screening and health care services compared with the general population. Quit lines are cost effective cessation treatments and are offered in nearly every state but it is not clear whether they are adequately serving this population. Until recently, data on sexual identity has not been available from BRFSS or quit lines. For this presentation that will illustrate sexual orientation in BRFSS (4 states) and quit lines (6 states) to understand the reach and effectiveness of quit lines for LGB tobacco users. Methods. We used 2005/2006 BRFSS data for 4 states and the prevalence of smoking by sexual orientation (2 states). We used data from 5 state quit lines (May 2005- July 2006) to compare characteristics of LGB and heterosexual quit line participants. We will present 12-month outcomes available in 2007. Results. In two states with data, smoking rates were higher among LGB than heterosexuals (21-33% vs 17-21%). Although LGB individuals represented 1.9-2.9% of the population, 4.8-8.4% of the quit line callers were LGB: higher than the expected population estimates of 3.3-3.4%. LGB who used the 5 state quit lines were similar to heterosexuals on gender, education, type, and amount of tobacco used, level of addiction and number of quit attempts. Compared with heterosexuals, LGB quit line users were younger (mean ages=36 vs 42), more likely to be Hispanic (24.3% vs. 28.7 %), and less likely to be white (53.2% vs. 58.5%). LGB and heterosexuals reported similar sources of hearing about the quit line; TV/commercials (56%), family/friend (13.8% vs. 11.5%) and health professionals (6.3% vs. 7.3%). Conclusions. Preliminary data indicates that quit lines are reaching LGB tobacco users in 2 states with available data and LGB callers are similar to the general quit line users. Further research is needed to determine the reach of services for this population remains to be analyzed. Replication of this study requires that more states add questions about sexual orientation to BRFSS and quit lines.

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POSI2-115
REACH, EFFICACY, AND COST-EFFECTIVENESS OF PROVIDING FREE NICOTINE PATCHES TO SMOCKERS IN LOW-INCOME COMMUNITIES THROUGH A TELEPHONE QUITLINE

Donna Warner, M.B.A., M.A., Nancy A. Rigotti, M.D.*; Thomas Land, Ph.D., Ann Marie Rakovic, M.S.W., Lois Keithly, Ph.D., Massachusetts Department of Public Health; Tobacco Research and Treatment Center, Massachusetts General Hospital and Harvard Medical School, and John Snow Inc.

Background: Offering free nicotine replacement therapy (NRT) through telephone quitlines is hypothesized to increase smokers’ access to treatment and increase population-level cessation rates. Only limited data are available to assess the reach and efficacy of this strategy, especially for low-income smokers. Methods: In 2005 Massachusetts offered a 9-week program that gave 2 weeks of free nicotine patches to smokers (>=10 cig/day) who planned to quit in 7 days and lived in 2 low-income cities with high smoking rates. Smokers called the state’s Smokers Helpline, which screened for patch eligibility and offered but did not require treatment. Results: Helpline call volume from the target cities increased 21-fold during the program but was unchanged outside the target area. 2282 smokers (5.7% of smokers in the target cities) called the Helpline and 1560 smokers (13.4% of smokers of >=10 cig/day) were sent patches. Self-reported 7-day quit rates at 3 and 6 mo were 23.5% and 21.0%. At 6 mo, participants, compared to concurrent controls, were more likely to have quit for the past 7 days (21% vs 8%; AOR 2.73, 95% CI: 1.05-7.11) and past 30 days (19.5% vs 7.0%, AOR 3.09; 95% CI: 1.12-8.51) and to have used nicotine patches (89% vs. 41%, AOR 2.87, 95% CI 1.57-5.31), but were less likely to have used counseling (27% vs. 70%, AOR 0.15, 95% CI 0.08-0.29). Program cost per quitter was $545; marginal program cost per additional quitter was $878. Conclusions: A quitline nicotine patch promotion and delivery program increased the Massachusetts Smokers Helpline in a low-income area. It was a cost-effective way to expand use of evidence-based treatment, promote use of state-funded quitlines, and increase smoking cessation rates at the population level.

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POS2-116 MOTIVES FOR QUITTING AMONG ADOLESCENT QUILTLINE CALLERS

Tammy Sims, M.D., M.S.*; University of Wisconsin Medical School; Timothy McAfee, M.D., M.P.H., Free & Clear, Inc.; Michael C. Fiore, M.D., M.P.H., and Timothy Baker, Ph.D., University of Wisconsin Medical School

Introduction: Tobacco use is a disease that usually begins in the pediatric population; about 80% of smokers became daily smokers before age 20. However, assessments and interventions are largely developed for, and with, adults. Thus, while there is a need for effective youth smoking cessation interventions, there is relatively little research that can be used to design such interventions. This pilot study was designed to identify targets for adolescent cessation interventions. Specifically, it elicited data on important motives for quitting among adolescents.

Methods: Teens 13 to 19 years old who smoking at least one cigarette in the last 30 days, and who called the WI Tobacco Quit Line for help with quitting, were invited to participate in the study. Using a 15-20 minute telephone interview format, 50 teens (56% female) responded to both forced-choice and open-ended questions about quitting motives.

Results: Teens who called the quit line for smoking cessation services were frequent smokers and reported smoking an average of 28 out of the last 30 days. The most highly endorsed motives for smoking cessation were related to concerns about health. The motives that received the lowest endorsement ratings were related to religious beliefs and concerns about the social desirability of smoking. More females than males highly endorsed quitting among friends as motivation for their own smoking cessation attempt (c2=9.319; p<.05). Females also reported being more influenced by knowing someone who was made seriously ill by smoking, rating it as an extremely important reason to quit females vs. males (c2=11.331; p<.05). Females were also more likely than males to rate concern about the effect of smoking on appearance as very important or extremely important in motivating them to quit (c2=9.613; p<.05).

Conclusion: These preliminary data provide insight into which motives for cessation are important to youth and may be helpful in designing interventions and tailoring smoking cessation messages to youth populations.

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POS2-117 QUITLINE COUNSELORS’ PERSPECTIVES ON ENGAGING UNDERSERVED SMOKERS IN TELEPHONE COUNSELING

N.P. Chin, D.J. Ossip-Klein*, T. Padmore, R. Garcia, J. Gale, University of Rochester Medical Center

 Quitlines (QLs) provide evidence-based interventions to large populations of smokers, including ethnic minority and low-income groups. This project examines methods to further increase the reach into underserved populations to better address health disparities. QL counselors are front-line workers whose unique perspectives on QL callers may inform development of new promotional strategies. Underrepresented groups were defined as low-income populations, blacks, Hispanics, Asian Americans, and Native Americans. This study reports on results of focus groups conducted with QL counselors for the New York State Quitline. Two were conducted with QL counselors who provide proactive counseling to Medicaid/ uninsured callers across NYS. 29 counselors participated (6 male, 23 female). Counselors’ perspectives were consistent across focus groups. Native Americans were the least often encountered group, and low-income white the most often. Key observations emerged in two areas. First, recommended promotion- al strategies included evidence-based approaches consistent with the literature (e.g., use of an ethnically concordant spokesperson; personal testimonies; graphic examples; ethnically targeted media campaigns), but deployed in community-based settings, such as places of worship, community centers, and schools. Applying evidence-based QL promotion to community-based organizations may increase reach in specific underserved groups at a lower cost than mass media and may respect the resource constraints of QLs regarding call volume. Second, counselors identified proxy callers as important mediators in QL use among low-income whites and Latinos; proxies included wives calling for husbands, parents for children, and spouses for those with medical barriers to telephone use. To the extent that proxy callers are a key group, policies for these callers need to be addressed: should proxy callers be encouraged in hard-to-reach populations, how can QLs that provide medications deal with proxies, and how can proxy calls be best converted to contact with the actual smokers.

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POS2-118 HOW MUCH FREE NICOTINE MEDICATION SHOULD WE GIVE SMOKERS CALLING A QUIT LINE?

K. Michael Cummings, Ph.D., M.P.H.*, Andrew Hyland, Ph.D., Sara M. Abrams, M.P.H., Brian Fix, M.A., Roswell Park Cancer Institute, Buffalo, NY

Previous studies have found that offering free nicotine medications through a quit line can increase call volume and also improve the odds of smokers quitting over the course of a year. The New York State Smokers’ Quit line has provided free nicotine medications to smokers calling for assistance to quit. Eligible smokers receive a 2-week starter kit of nicotine patches, but special promotions have allowed us to vary- ing the amount given to selected groups of callers ranging from 4-, 6-, up to 8-weeks of free patches. The objective of this study was to explore how varying the amount of free nicotine medications given to smokers influenced patch usage patterns and quit rates. Smokers who received the free nicotine patches were interviewed 3 to 6 months after calling the Quit line to assess their use of the patches and smoking status. Those who received 6- and 8-week supplies of free patches were also interviewed at 12 months. A telephone survey asked respondents to report how many of the free nicotine patches they used, whether they obtained additional medication, and overall duration of patch use. Quit rates were computed based on 7-day non-smoker prevalence (“Have you smoked a cigarette, even a puff in the past seven days?”). The findings show, quit rates measured 3- to 6-months after calling the Quit line ranged from 38% for smokers who received the 2-week supply of free nicotine patches to 30% for those who received an 8-week supply of patches. The 12 month quit rate for smokers who received the 6- and 8-week free supply of nicotine patches were essentially same at 33% and 32%, respectively. A greater percentage of those who received the 2-week supply of free nicotine patches used all of them and reported purchasing additional patches beyond those sent for free compared to those receiving the 4-, 6-, and 8-week supply of patches. Purchase of additional nicotine medications was a significant predictor of smoking status at follow-up as was duration of patch use. Our conclusion is that the amount of free nicotine patches sent to smokers seeking quitting assistance through a telephone quit line was unrelated to quit success.

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POS2-119 HOW CAN WE MOTIVATE MORE PEOPLE TO STOP SMOKING?

K. Michael Cummings, Ph.D., M.P.H.*, Andrew Hyland, Ph.D., Brian Fix, M.S., Sara Abrams, M.S., Roswell Park Cancer Institute, Buffalo, NY

This poster presents data from a series of studies conducted in New York State that investigated factors that motivate smokers to make a quit attempt and interventions to encourage smokers to quit. Smokers say concern about health, access to lower cost stopping medications, and financial incentives are factors that motivate them to think seriously about quitting. Intervention studies conducted in New York State over the past four years confirm the importance of these factors in moti- vating smokers to call the State’s Quitline.Hard hitting mass media campaigns that graphically educate smokers about the risks of smoking reliably increased calls to the Quitline. The offer of free nicotine medication also increased call volume to the Quitline, sometimes dramatically so. Among smokers sent free nicotine medications 85%-90% reported making a quit attempt and quit rates were consistently higher who got free medications compared to those not sent the free medication. Efforts to stop smoking also appear to be influenced by the cost of cigarettes with calls to the Quitline varying in relationship to the price of variation between regions and overtime. Monetary incentives offered through Quit and Win contests have also motivated smokers to make quit attempts. In summary, studies conducted in New York State find that smokers can be motivated to make a quit attempt by communicating information about the health risks of smoking, providing access to stop smoking medica- tions, and providing financial incentives.

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POS2-120

UTILIZATION OF A MULTI-MODAL EDUCATIONAL MODEL TO ADVANCE AND DIFFUSE THE CLINICAL PRACTICE GUIDELINE FOR THE TREATMENT OF TOBACCO DEPENDENCE: APPLICATION AND INDICATORS OF SYSTEMS CHANGE IN A REAL WORLD SETTING


Clinicians play an important role in providing interventions to assist patients quitting tobacco use. Evidence demonstrates that implementation of the U.S. Public Health Service Clinical Practice Guideline: Treating Tobacco Use and Dependence increases abstinence from tobacco use, thereby decreasing tobacco-related disease, disability and premature death. However, significant barriers exist that interfere with clinicians’ systematic behavioral counseling interventions including lack of relevant knowledge regarding identification and assistance to people dependent on tobacco, the relative effectiveness of various treatments, time constraints, and inadequate institutional support. Targeted professional education in evidence-based cessation is minimal in most health professions educational programs. Since 1998, the HealthCare Partnership (HCP) at The University of Arizona has developed and implemented a competency-based educational intervention, the Arizona Certification Model applicable for non-medical and licensed medical individuals to teach brief tobacco dependence treatment interventions congruent with their community and professional roles. In 2004, the HCP launched an adapted certification program, Basic Tobacco Intervention Skills Certification for Medical and Allied Health Professionals, based on Bandura’s Model of self-efficacy, Azjen’s Theory of Planned Behavior and evidence-based findings from the U.S.P.H.S Clinical Practice Guideline. Approximately 900 participants completed the program from April 2004 through August 2006. Pre and post certification and three-month follow-up data were analyzed, including measures of self-efficacy, knowledge, skills and behavior change. Participants demonstrated significant increases in self-confidence levels for the items measured, as well as high satisfaction scores. At three-month follow-up, confidence levels were maintained and participants reported an average of eight interventions per month. These findings support an increase in self-efficacy, increasing clinicians’ likelihood to provide brief interventions with patients/clients who use tobacco, reflecting a transfer of learning to practice.

Arizona Department of Health Services Office of Tobacco Education & Prevention Program

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POS2-121

MENTAL HEALTH CARE PROVIDERS’ PERSPECTIVES ON CLIENT TOBACCO USE: PERCEPTIONS FROM COMMUNITY SETTINGS

Annette SH Schultz, Ph.D., R.N.*, Faculty of Nursing, University of Manitoba; Joy L Johnson, Ph.D., R.N., Malchy, M.Sc., and Pamela A Ratner, Ph.D., R.N., Nursing and Behavior Research Unit, University of British Columbia; Joan L Bottorf, Ph.D., R.N., Dean Faculty of Health and Social Development, UBC Okanagan; Ric Procyshyn, M.D.; Riverview Hospital; Peter Gibson, M.D., Vancouver Community Mental Health Services; Margaret Osborne, Ph.D., R.N., Marlee Groening, Ms.N., R.N., and Paula Tognazzini, Ms.N., R.N., School of Nursing, University of British Columbia

Background: Historically, integrating tobacco control in a mental health context has been problematic. Interestingly, evidence suggests mental health clients are interested in having their tobacco use being addressed by health providers. Acute care providers suggest tobacco use is an issue for a community setting when clients are stabilized. Yet, limited knowledge about tobacco cessation practices and supports available for persons with severe and persistent mental illness (SPMI) living in the community limits our understanding of community providers’ practice. This study was designed to learn about contributing factors for continued tobacco use in this population, by surveying clients and their providers. In this presentation, we focus on the role and attitudes of providers concerning tobacco cessation practices.

Procedure: All frontline mental health providers servicing adults living in the community with SPMI, were the target population, which included employees (i.e., Psychiatrists, nurses, outreach staff, housing workers etc.) from 21 community mental health sites. We examined various measures including tobacco support skills, practices and cessation knowledge, barriers to smoking cessation advice, and personal smoking history. We collected 282 completed surveys (response rate range of 31-38%). Most respondents were female (66%) and Canadian/European (91%) and worked full time; 22% were current smokers.

Results: Addiction and anxiety reduction were common reasons attributed to the high rates of client smoking. Common barriers preventing the provision of tobacco cessation support was a lack of clarity about the provider ‘role responsibility’ and ‘role expectation’ concerning tobacco cessation. Additionally were misconceptions about mental illness and tobacco use, and about the role nicotine plays in clients’ lives. A lack of training, skills and knowledge about tobacco cessation were commonly reported, as was an interest in receiving relevant training. Although the focus is on provider perceptions, we also highlight inadequacies in community resources and training recommendations for providers as avenues to enhance support available for this client group.

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POS2-122

PROJECT REACH: TRAINING COMMUNITY-BASED “HEALTH INFLUENCERS” TO HELP TOBACCO USERS QUIT

Myra Muramoto, M.D., M.P.H.*, Jean Campbell, M.P.A., Tim Connolly, R.N., M.N., Mikel Aickin, Ph.D., Univ. of Arizona; Harry Lando, Ph.D., Univ. of Minnesota

Most research on training interventions to promote use of tobacco cessation services has focused on health care providers and clinical systems, overlooking the large numbers of “health influencers” (HI) – friends, family, coworkers, human service providers, and others in a tobacco user’s smokers’ social network – who are willing to help the user quit. Potentially, HIs are a large and untapped resource to reach tobacco users, encourage quitting and use of effective treatments. Project Reach is a state-wide randomized trial comparing the efficacy of in-person training (IPT) vs. web-based training (WBT) vs. a usual practice comparison group to teach non-medical HIs tobacco cessation BI skills. The potential audience of HIs include people from a broad range of occupations with opportunity to influence health behavior, e.g. social services, education, child care, physical fitness, clergy, community volunteer, clerical, human resources, law and corrections. The Reach curriculum teaches a motivational approach developed for lay interventionists in non-healthcare settings and how to assist quitting by recommending effective cessation treatments. Evaluation includes knowledge, self-efficacy and implementation of BI skills. Participants are assessed pre- and post-training, at 3 and 6 months. Qualitative sub-studies examined impact of gender, age, ethnicity and relationship closeness of participant’s HI experiences. Participants (n=898) had a mean age of 43 yrs (+14), were 77% female, 33% ethnic/racial minorities, 41% with high-school education. Motivation for providing BIs was 65.8% personal vs. 31.9% work-related; 43% had never conducted a BI (never interveners [NI]). Analyses of pre-post training data showed that HIs in both WBT and IPT groups had significant gains in knowledge and self-efficacy with BI skills. At 3 months post-training, 82% of NI had done a BI in the past 30 days; those with prior BI experience significantly increased the number of BIs performed in the past 30 days. These results suggest BI training for non-medical HIs has potential to mobilize large numbers of community members to encourage tobacco users to quit and to use effective cessation aids. National Cancer Institute Grant# R01CA093957.

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POS2-123

ENABLING AND SUSTAINING ACTIVITIES OF LAY HEALTH INFLUENCERS: LESSONS FROM A COMMUNITY-BASED TOBACCO CESSATION INTERVENTION STUDY

Mark Nichte, Ph.D., M.P.H., Heidi Castaneda, M.P.H., University of Arizona

This paper presents data from a large-scale study which trained health influencers to conduct brief tobacco cessation interventions. Participants were followed up for nearly nine months after receiving training and participated in interviews and focus groups to discuss their experiences conducting brief interventions. Our goal was to identify the mix of resources volunteers considered useful, and what forms of interaction might promote their sustained interest in tobacco cessation. We further investigated what activities and forms of communication might foster a “community of practice” among health influencers engaged in brief tobacco cessation interventions. Four lessons regarding cessation intervention training and sustainability emerged in this data: First, participants felt that formal training provided them with a sense of legitimacy that carried over in their interventions. Second, health influencers were concerned about the impact of their cessation promotion on their social relationships (“social risk.”) This concept refers to the threat posed to social relationships during the process of brief interventions. We suggest that effective and sustainable training of lay health influencers rests on the acknowledgement of social risk. Third, the role of material resources is crucial to health influencers, enabling them to initiate and follow through on brief interventions. Different forms of material resources were deemed appropriate in different social contexts. A strong message we received from participants in this study was that, when designing materials, it is necessary to look beyond the clarity of presentation and educational value of materials. Consideration of the social life of materials was equally important, that is, how they might be used in different social situations, how convenient they were to carry and use, how frequently they were to be carried around, and what materials might be used in the initial stages of a brief intervention and then in latter stages. Finally, we address the issue of sustaining health influencer motivation and the creation of a “community of smoking cessation practice” in which health influencers feel they are members.

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POS2-124

NURSES’ AQUISITION AND RETENTION OF SMOKING CESSATION COUNSELING SKILLS: A PROSPECTIVE STUDY.

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Nurses play a key role in smoking cessation counseling and home health care (HHC) is a new channel for reaching smokers. We trained 98 HHC nurses (97% female, 95% Caucasian, 13% smokers) to deliver smoking cessation counseling to their patients. Nurses attended a one-day training workshop in groups of 8-10 nurses. The training is to examine whether training was associated with changes in: (1) attitudes toward smoking-cessation counseling; and (2) smoking cessation counseling behaviors (delivery of the 5 A’s). Self-report data were collected at baseline before training, immediately after training, and six months later. Nurses understood that all data were kept confidential from their organization. Repeated measures analyses revealed that, at post-training, nurses reported higher levels of self-efficacy to counsel (p <.001), and were more likely to believe that smoking counseling is a worthwhile part of their practice (p <.001), important for patients (p <.001), and important to their organization (p =.007) than at pre-training. The largest increases were observed for nurses with >15% attrition, who demonstrated the largest changes in attitudes toward smoking cessation. More than 70% of nurses reported feeling competent in smoking cessation counseling behaviors (delivery of the 5 A’s). This study suggests that training may facilitate both short- and long-term changes in attitudes and behaviors with regards to smoking cessation counseling.

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POS2-125

TOBACCO USE, ATTITUDES AND KNOWLEDGE OF NICOTINE REPLACEMENT THERAPY AMONG NURSING STUDENTS

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Nurses’ involvement in providing tobacco cessation interventions is limited, although research shows that nurse-delivered smoking cessation is effective. Traditionally, interventions to prevent or stop tobacco use have not been central to nursing practice, and, thus, not a nursing education focus. Tobacco cessation guideline implementation may be impeded by knowledge deficits about effective therapies and nicotine replacement therapy (NRT). We studied baccalaureate nursing students’ tobacco use history and their attitudes and knowledge about nicotine replacement therapy (NRT). Students (N=168) were invited to anonymously complete the Attitudes Toward Nicotine Replacement Therapy Scale (ANRT-12) and a background data form that included questions about tobacco use. Data were analyzed with descriptive and nonparametric statistics. The response rate was 49% (n=83). Students’ mean age was 23 years (SD=3.7). Most were female (95%; n=79), Caucasian (89%; n=74) and single (82%; n=68). Almost half (46%; n=38) were employed in nursing. Six (7%) reported being current smokers, eight (10%) former smokers, and eleven (8%) of these individuals had never smoked. Mean age of first cigarette was 13.5 ± 16.0 years of age. Nurses attended a one-day training workshop in groups of 8-10 nurses. The training is to examine whether training was associated with changes in: (1) attitudes toward smoking-cessation counseling; and (2) smoking cessation counseling behaviors (delivery of the 5 A’s). Self-report data were collected at baseline before training, immediately after training, and six months later. Nurses understood that all data were kept confidential from their organization. Repeated measures analyses revealed that, at post-training, nurses reported higher levels of self-efficacy to counsel (p <.001), and were more likely to believe that smoking counseling is a worthwhile part of their practice (p <.001), important for patients (p <.001), and important to their organization (p =.007) than at pre-training. The largest increases were observed for nurses with >15% attrition, who demonstrated the largest changes in attitudes toward smoking cessation. More than 70% of nurses reported feeling competent in smoking cessation counseling behaviors (delivery of the 5 A’s). This study suggests that training may facilitate both short- and long-term changes in attitudes and behaviors with regards to smoking cessation counseling.

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POS2-126  TOBACCO EDUCATION IN INDIAN MEDICAL SCHOOL TRAINING: BASELINE SURVEY FINDINGS

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Physicians have a critical role in advancing tobacco control in developing countries. As future physicians, medical students should be educated on the public health implications of tobacco and their pivotal role as effective change agents. However, medical curricula in India has not changed to address tobacco control. Data on tobacco education content in current Indian medical curriculum is unavailable.

Methods: We conducted a cross-sectional survey among 1366 medical students (mean age 21.46% male) in 2 medical schools of Kerala, India. Information on tobacco use, current status of tobacco education, perceptions towards and need for incorporating tobacco education into the medical curriculum was collected using a structured questionnaire.

Results: Current tobacco use was 10% [95% CI 8.5-11.7] (20% males, 2% females). Only 55% reported receiving some tobacco related information in the context of overall health risks and primarily focused on disease related risk. Of those who received, 90% reported that tobacco information is relevant while 51% stated that the received information was insufficient. Only 16% reported being provided information on cessation. Ninety five percent reported that it was very important to incorporate tobacco education into the medical curriculum and were very receptive to learning more about tobacco, particularly cessation and wanted to receive tobacco education lectures as part of subjects such as community medicine, internal and respiratory medicine. Most students also desired to receive practical tobacco cessation training with patients. Notably, even though 80% perceive quitting being difficult, 71% had talked or explained to their patients on tobacco’s health risks during clinical interactions.

Conclusion: Current tobacco education is inadequate and does not effectively address cessation and control issues. An initiative is presently underway by the authors to incorporate tobacco education modules in the medical curriculum.

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POS2-127  MEASURING PROVIDER PERFORMANCE OF TOBACCO CONTROL: COMPARING IMMEDIATE ECOLOGICAL MOMENTARY ASSESSMENT WITH DELAYED PATIENT PHONE SURVEYS

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Background: Provider self-report, chart abstraction, and patient phone surveys have been used to measure delivery of tobacco counseling.

Objective: We compared an immediate patient-report of tobacco screening and quit advice with a delayed patient phone survey.

Methods: Using principles of ecological momentary assessment, patient exit card surveys were completed immediately at the end of the office visit, to assess whether, at that visit, the provider asked about tobacco use, and Advised to quit. The study was conducted in 200 dental practices located in the Southeastern U.S. For six practices, we then conducted a follow-up patient phone survey between two and six months after the exit cards were returned from the dental practices to reassess Ask and Advise, for evaluation of disagreement between immediate patient exit card reports and delayed phone surveys.

Results: Of the 210 patients contacted, 150 (71%) completed the exit card and delayed phone survey. Agreement comparing immediate and delayed reports for age, gender, and smoking status was high (over 97%). Thirty percent (45/150) reported being Ask at baseline, and 21% (n = 32/150) reported being Advised on delayed follow-up, with overall agreement of 70% (105 concordant pairs). Of those who responded Yes to Ask at baseline, 35% said Yes at follow-up (sensitivity) and of those who said No at baseline, 85% again said No to Ask at follow-up (specificity). Seventeen smokers participated in the immediate and delayed assessment. The proportion who reported they were Advised to quit varied (immediate=29%, delayed=47%). Of those who said Yes to Advise at baseline (n=8), 38% said Yes at follow-up, and of the Nos at baseline (n=9), 78% said No again.

Conclusions: Reports of provider behavior by patients changed considerably when the immediate and delayed reports were compared. Current national standards, such as HEDIS use delayed phone surveys. Based on this study, and prior studies comparing immediate assessments with the gold standard of audiotapes, we speculate that immediate reports may have higher accuracy in assessing provider performance.

National Institute of Drug Abuse (NIDA) and the National Institute of Dental and Craniofacial Research (NIDCR) at the National Institute of Health.

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POS2-128 INITIAL VALIDATION OF A NEW ASSESSMENT INSTRUMENT INTENDED FOR USE IN PHYSICIAN-GUIDED CESSION INTERVENTIONS


Introduction: Current USPHS tobacco use treatment guidelines suggest that clinicians should identify and treat every tobacco user at every visit. However, clinician adherence to this standard is sometimes limited by poor perceived self-efficacy. One strategy to improve self-efficacy involves identifying intermediate outcome targets, and potential mechanisms for achieving these goals. Unfortunately, available measures of cessation progress/withdrawal were neither meant for use within a clinical intervention, nor designed for longitudinal assessment of individuals. We report the initial development and validation results of a new instrument potentially useful in guiding tobacco use treatment interventions by physicians.

Methods: Through expert interview, we compiled 40 representative candidate items from existing measures of cessation related outcomes. We then interviewed 65 current or former smokers to evaluate each item with regard to process (i.e., clarity, literacy, time requirements) and relevance. Items were modified and/or eliminated based on participant feedback using an iterative approach. Next, evaluation of the potential impact on treatment decisions was estimated through direct interview with 13 physician experts. Items with favorable and concordant process, relevance and physician impact ratings were retained.

Results: We identified 15 items that are easily administered, relevant, and important in guiding treatment decisions. Items fall into 5 categories: general health perception, smoking habit, withdrawal symptoms, control over behavior, and utility of abstinence.

Discussion: These 15 items appear to have context and construct validity in measuring intermediate outcomes of a physician-directed cessation attempt. Together they form the basis for the structured measurement of cessation progress during treatment. Pending criteria validity and reliability estimation, this tool may help improve physician self-efficacy in tobacco use treatment by guiding clinical decision making.

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POS2-129 NICOTINE DEPENDENCE, MOTIVATION TO QUIT, AND DIAGNOSIS AMONG EMERGENCY DEPARTMENT PATIENTS WHO SMOKE: A NATIONAL SURVEY

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Background: Patients who visit hospital emergency departments (EDs) have smoking prevalence rates higher than that of the general population. The tobacco use profiles of these patients have largely been characterized in small, single institution cohorts.

Objective: To survey adult smokers visiting a large national sample of EDs, as part of a study examining the efficacy of a brief educational and administrative intervention in emergency physicians’ knowledge, attitudes and behavior regarding ED-based tobacco control. Methods: A convenience sample of patients in EDs at 9 academic medical centers was surveyed from May-July 2006. Eligible patients were age 18 or older, everyday or some day smokers, speaking English or Spanish, able to provide written informed consent, and not actively psychotic. Data were doubly entered in Microsoft Excel and analyzed with SPSS 13.0 (SPSS, Chicago, IL).

Results: 1222 patients were interviewed at the 9 EDs, with a mean age of 40.7 years (95% CI 15.0-86.4), with 46.5% female. 54.4% were uninsured or had Medicaid, 29.9% had no usual source of care. Patients smoked a median of 10 cigarettes daily (IQR 6-20), with a median score on the Fagerstrom Test for Nicotine Dependence of 4 (IQR 2-5), and a median score on the 9-point Ladder of Change of 5 (IQR 3-6), comparable to that of a high-precontemplator-low contemplator. Smokers with a diagnosis of cardiovascular, respiratory, or malignant disease were more interested in quitting than others (median Ladder score 4 vs. 6, P<0.001). Smokers with a presenting complaint of chest pain or dyspnea were more interested in quitting than others (median Ladder score 4 vs. 6, P=0.002).

Conclusion: ED patients smoke at moderate amounts, with moderate levels of addiction and interest in quitting. ED smokers with a tobacco-related diagnosis, or who believe their ED visit is related to smoking, are more interested in quitting. These findings suggest that the ED visit may provide a “teachable moment” to reach smokers with a tobacco-related problem.

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POS2-130 PATIENT-REPORTED SMOKING CESSATION COUNSELING AND FUTURE SMOKING BEHAVIOR

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Objective: To assess the prevalence and effectiveness of patient reported smoking cessation counseling (SSC) and to determine whether certain patient demographic factors are independently associated with the provision of counseling by physicians.

Methods: Data from the COMMIT cohort of nearly 5,000 adult smokers from twenty U.S. communities were examined prospectively from 2001 to 2005 to ascertain current smoking status, quit attempts, and the extent of SSC received from physicians.

Results: Nearly 80% of smokers who visited a doctor within the past 5 years reported being advised to quit smoking, 44% were prescribed or advised to purchase pharmacotherapy, 27% were advised to set a quit date, and only 12% were referred to a stop-smoking program. After adjustment for age, gender, race, income, and cigarettes per day, patients who were advised to quit smoking [RR 1.4, p <0.05], who were prescribed or advised to purchase pharmacotherapy [RR 1.4, p <0.05], and who were explained the dangers of smoking [RR 1.3, p <0.05] were found to be more likely to quit smoking at follow-up. Patients who were advised to quit were less likely to have relapsed at follow-up [RR 0.6, p<0.05]. Older individuals were found to be less likely to be asked about smoking status [RR .98, p<0.05] and to be explained the dangers of smoking [RR .98, p<0.05], whereas males were found to be more likely to be asked about smoking status [RR 1.5, p<0.05].

Conclusions: These findings suggest that opportunities exist for physicians to provide SSC in the clinical setting. There appears to be several demographic and clinical factors that can potentially influence the provision of SSC. Further research is needed to better understand what aspects of SSC are related to smoking cessation.

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POS2-131 RESEARCHERS AND PRACTITIONERS — ONE WORLD, DIFFERENT PRACTICAL ONTOLOGIES

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Translating evidence into practice is a key priority of applied science. We have been studying the relationship between the program and research areas of a prominent Australian Tobacco Control Unit so as to better “engineer” their relationship. One important observation was that researchers and practitioners appear to use different “practical ontologies” in discussing their work. One manifestation of this was practitioners’ use of personal causal paths and researchers’ use of impersonal, conceptual causal paths (e.g. practitioners telling of the challenges in helping an individual smoker quit, versus scientists elucidating general principles about what influences quitting). In this paper we use nicotine gum as a vehicle to explore the implications of this difference. Science tells us gum can be effective in increasing the chances of quitting. It assumes that this information will be enough to encourage practitioners to recommend it, and smokers to use it. However, practitioners know it is more complex. They may have to deal with smokers’ concerns about use with other medications, concerns about taste, misconceptions about nicotine, concerns about dependency, and/or smokers who want to stop using it before the recommended time. For some of these issues, there may be fundamental reasons why science cannot provide answers, but for others, science has just not been asking the right questions. Science could, in fact, provide models of drug interactions, understanding about acquired tastes, and the facts about both nicotine and dependency. However, it cannot provide useful guidelines on how to relate them to the complexity of each individual case. In this paper we contrast the questions scientists and practitioners have answered, with the questions practitioners say they would find helpful. We see this as part of an ongoing dialogue between researchers and practitioners to increase the likelihood that researchers are asking questions that practitioners want answers to. We believe this is a significant barrier to the implementation of Evidence Based Practice.

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POS2-132 FORCES IN SMOKING INITIATION AMONG CALIFORNIANS OF KOREAN DESCENT


This study presents the correlates of initial exposure to cigarettes, variables associated with smoking prevalence and with continued smoking (or not) among adults of Californians of Korean descent who have at least an initial exposure to cigarettes. Data were drawn from telephone interviews with adults (N=2830) developed from a random sampling of listed persons in California with Korean surnames during 2000-2001. 86% of attempted interviews were completed and 85% of the interviews were conducted in Korean. Nearly half of all respondents had been exposed to cigarettes (49.0%), and 41.9% of these reported current smoking by CDC criteria (currently smoke and have smoked 100 cigarettes during life). Multivariate analysis suggests that social reinforcers and social contingencies may influence both initial exposure to tobacco and continued smoking among Californians of Korean descent. Influences of acculturation on taking the first puff and also on current smoking status diverged by gender. Social support increased the likelihood of the first puff among both genders but the association was stronger among females than among males. Social reinforcers that lead to current smoking also influence taking the first puff, and interventions should be directed at these variables among young Korean non-smokers.

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POS2-133 INTEREST IN STOPPING SMOKING AMONG MID-ATLANTIC LATINO PRIMARY CARE PATIENTS

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Latinos remain underrepresented in health research. This study describes smoking history, interest in program participation, and preferences for smoking cessation interventions among Central and South American Latinos in the greater Washington, DC area. Of 141 Latinos current smokers aged 18 to 70 (M=37.6), the majority were male (56%), unmarried (63%), employed less than full-time (52%), with a greater than high school education (62%), and reported smoking an average of 8.7 CPD (SD =7.4). Eighty percent reported at least one 24-hour quit attempt in the past year, 62% reported multiple past quit attempts, 9% reported past use of pharmacotherapy, and 11% reported past use of alternative methods of stopping (e.g., acupuncture, herbal medicine). Sixty-three percent reported “definite interest” in participating in a clinic-based smoking cessation program. Smokers who smoked more, were in the preparation stage of change, reported symptoms of depression, and were not employed full-time were more likely to be highly interested in participation. Over 92% of smokers preferred a smoking cessation program include health information, support, and behavioral intervention: 89% reported interest in advice from healthcare providers, 82% reported interest in pharmacotherapy. In a diverse Latino population, we identified high rates of previous quit attempts, low utilization of pharmacotherapy, and strong interest in program participation. Efforts to increase awareness of and access to smoking cessation interventions is needed in this group.

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POS2-134 "TECNICAS BASICAS PAPA DEJAR EL TABACO": 6-YEAR FOLLOW-UP OF A CAPACITY-BUILDING, CULTURALLY AND LINGUISTICALLY APPROPRIATE, EVIDENCE-BASED SMOKING CESSATION CERTIFICATION PROGRAM FOR SPANISH-SPEAKING HEALTH PROMOTERS, CLINICIANS AND NON-CLINICIANS


The intention of this study was to evaluate the outcome of a Spanish-language, capacity-building, culturally and linguistically appropriate, evidence-based smoking cessation certification program: Técnicas Básicas para Dejar el Tabaco. Nicotine dependence among cultural minorities in the United States is a serious problem often inadequately addressed. In the 1999-2001 National Survey on Drug Use and Health (NSDUH), CDC found that adult cigarette smoking prevalence in Mexican, Puerto Rican, non-Hispanic black, and American Indian/Alaska Native men, was higher than in non-Hispanic white men. Additionally, in regard to cessation interventions, current literature available addressing ethnic minorities and smoking does not comprehensively incorporate pharmaceutical cessation strategies (e.g., nicotine replacement therapies). Based on the U.S. Public Health Service Guideline: Treating Tobacco Use and Dependence, this program, a component of the nationally recognized Arizona certification program, incorporates behavioral and pharmaceutical cessation strategies in diffusing evidence-based brief interventions at a community level. This paper describes the Arizona certification program developed to increase the capacity of the U.S. Hispanic population to address tobacco use within their communities. Implemented as a competency-based, multimodal educational intervention, participant data was analyzed from pre and post-workshop as well as three-month follow-up instruments measuring knowledge, skills, self-confidence, utilization of client-centered materials, brief interventions conducted and referrals made.

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Results: All analyses of neighborhood social context with tobacco use and dependence. The current study examined the relations between neighborhood social context and smoking-related factors among African American (AA) smokers.

Methods: AA smokers (192 males, 199 females) participated in a randomized clinical trial of a culturally-tailored treatment delivered by palm-top computer. Measures of neighborhood social context included Neighborhood Problems, Neighborhood Vigilance, Social Cohesion, and Social Control. Demographics included age, gender, household income, and education. Smoking assessments included cigarettes/day, years smoking, time to first cigarette, and the Wisconsin Smoking Dependence Motives Questionnaire (WISDM), a comprehensive measure assessing 13 dimensions of dependence.

Results: All analyses of neighborhood social context with smoking-related measures controlled for age, gender, household income, and education. Neighborhood social context was not related to demographics, cigarettes/day, years smoking, or time to first cigarette. Neighborhood Problems was significantly associated with all 13 WISDM subscales (partial r’s from .16 to .26, p’s<.05). Neighborhood Vigilance was associated with 12 WISDM subscales (partial r’s from .12 to .24, p’s<.05). Social Cohesion was associated with 11 WISDM subscales (partial r’s from -.11 to .20, p’s<.05). Social Control was associated with six WISDM subscales (partial r’s from .12 to .19, p’s<.05).

Conclusion: AA smokers whose neighborhoods were characterized by greater problems and vigilance, and less social cohesion and social control, were more dependent on tobacco (over and above the effects of age, gender, and socioeconomic status). Future research should attempt to elucidate the mechanisms through which neighborhoods influence smoking behavior, as current intervention approaches could potentially be improved by addressing neighborhood-level factors.

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POS2-138  "IT'S A CULTURAL THING": A QUALITATIVE INVESTIGATION OF SMOKING-RELATED HEALTH DISPARITIES AND CULTURALLY-SENSITIVE INTERVENTIONS AMONG AFRICAN AMERICAN SMOKERS

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The prevalence of smoking-related health disparities has prompted researchers to develop culturally-sensitive interventions. Yet, little is known about the knowledge and views of African American smokers regarding these factors. In this study, we aimed to gain insight into perceptions and attitudes related to (1) the smoking prevalence among African Americans, (2) smoking-related health disparities, and (3) culturally-sensitive interventions. A qualitative study consisting of six focus groups was conducted with African American smokers. Focus groups were held at a community health center in Syracuse, NY. Forty-one men and women, aged 21 through 64, were recruited by physicians and staff. The sample consisted of lower income smokers with moderate nicotine dependence. Participants were paid $20 as an incentive to complete a 90-minute session and self-administered assessments. A structured protocol consisting of open-ended questions guided the discussion. Deductive content analyses involved identifying key themes and thus was not included in the final model. Participants preferred culturally sensitive interventions, including health disparities, unique stressors and experiences, urban vs. suburban environments, and language differences. These findings illustrate variations in gender differences of adolescent OTC NRT use that might also impact the quality of quit attempts. Further, they may have implications for tobacco control and public health policies.

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POS2-140  RACE DIFFERENCES IN NICOTINE DEPENDENCE IN THE COGEND STUDY

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In this general population sample from the Detroit site of the Collaborative Genetic Study of Nicotine Dependence (COGEND), we tested Black-White differences in how soon after wake-up the smokers smoked their first cigarette ("time to first cigarette"), as an indicator of nicotine dependence, and its relationship with number of cigarettes per day (CPD). Analysis was conducted on respondents who have smoked ≥100 cigarettes in lifetime and were current smokers (n=1559; 1188 Whites and 371 Blacks). We found no significant race differences on time to first cigarette (chi-square statistic=2.81, 3 df, p-value=0.42), but significant race differences on CPD (chi-square=158.9, 4 df, p<0.001). We estimated the probability of nicotine dependence, defined by time to first cigarette less than or equal to 30 minutes, using a probit model. The interactions between race and CPD indicated significant differences in dependence at various levels of CPD. For example, at 15 CPD the probability of Black men being dependent was 0.23 higher than White men (p<0.001). The same amount of increase in probability of nicotine dependence was associated with smaller increases in CPD for Blacks than for Whites. The data support the hypothesis that the relationship between CPD and nicotine dependence varies by race, and that Black smokers might be dependent at lower levels of CPD than Whites. Supported by PO1 CA8939201.

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POS2-139  SOCIODEMOGRAPHICS AND PSYCHOACTIVE SUBSTANCE USE AS DETERMINANTS OF SMOKING STATUS IN AFRICAN CANADIANS

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Objective: To establish whether determinants of smoking status among Canadian African Americans are also determinants of light smoking status among a population of African Canadians.

Design: A case-control study in current smokers (smoke at least 5 of 7 days) (N=137) and tried nonsmokers (1-99 cigarettes, noncurrent) (N=143).

Results: There was a difference in gender distribution with smoking status as more smokers were male (p=0.001) and tried smokers were older than current smokers (p=0.001). In the final logistic regression model, participants who preferred culturally sensitive interventions, including health disparities, unique stressors and experiences, urban vs. suburban environments, and language differences, and targeted tobacco advertising. Themes related to diet included qualified clinicians, irrespective of race/ethnicity, opportunities for discrimination or stereotyping, and similarities across smokers of different races. In conclusion, cigarette smoking was regarded as normative, and highly prevalent in this sample of lower-income smokers. Attention to culture within interventions may be essential for some African American smokers. Finally, the development of culturally sensitive interventions should consider health risk perceptions and environmental factors.

This study was funded by Syracuse University.

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POS2-141  GENDER AND ETHNIC PREDICTORS OF ADOLESCENT NICOTINE REPLACEMENT THERAPY USE

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Adolescent smokers report access and use of nicotine replacement therapy (NRT) such as the patch or the gum for quit attempts, since these products are available over-the-counter (OTC). Additionally, previous reports have suggested both gender and ethnic differences in the use of NRT among adult smokers. Our aim was to compare adolescent NRT use by gender within African American (AA) and European American (EA) youth. In telephone interviews aimed to prescreen adolescent smokers for participation in two separate cessation trials, we analyzed responses to questions regarding their previous use of either patch, gum or another nicotine replacement product. Of 1860 adolescents (61.4% female, 45.5% African American, 15.9 +/- 1.5 years, FTND score 5.7 +/- 2.2), 22.8% reported previous NRT use. Chi-square analysis showed a significant difference in NRT use between African Americans and European Americans (18.4% vs. 26.3% (chi-square)=16.4, p<0.0001). Logistic regression analysis revealed a significant association between gender and NRT use after adjusting for FTND score. Among EA (n=1027), the association with gender was statistically significant (girls 23.4%, boys 30.7% (chi-square)=7.6, p=0.0098), which remained significant (p=0.013) after adjusting for FTND score via logistic regression. Among African Americans (n=823), the association showed a trend (girls 20.3% and boys 15.1% (chi-square)=3.49, p=0.062); this association became non-significant after logistic regression analysis adjusting for FTND (p=0.14). In a between-ethnicity gender comparison, AA boys were only half as likely to have tried NRT as EA boys (15.1% vs. 30.7% (chi-square)=23.4, p<0.0001). These findings illustrate variations in gender differences of adolescent OTC NRT use by race and ethnicity that may impact the quality of quit attempts. Further, they may have implications for tobacco-related health disparities. Overall, the relatively frequent access to nicotine replacement therapy by adolescent smokers suggests the need for practitioners to inquire about NRT use and provide systematic clinical support for adolescent cessation.

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POS2-142 SMOKING: CIGARETTES, CIGARS, BLUNTS AND OTHER MARIJUANA USE IN AN ETHNIC MINORITY POPULATION

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The association between use of marijuana and tobacco among teens has been established, yet the nature of this relationship is yet unclear. An emerging issue is the use of blunts, small cigars which are frequently hollowed out and filled with marijuana, a practice which is highly salient among some youths. We present findings from a study of smoking among Southeast Asians in the East San Francisco Bay Area. A total of 164 respondents replied to a brief close-ended survey, and described their use of and ideas about smoking in a longer semi-structured qualitative interview. The purposive sample was stratified by generation in the U.S. and gender as well as smoking status. Lifetime and past 30 days use data were collected for cigars, blunts (only marijuana-filled cigars) and other marijuana smoking (marijuana smoked in a pipe or rolled in paper) as well as cigarettes, and these substances were discussed in the qualitative interview. Survey results showed differences in use of these items: the lifetime rate for blunts (34.1%) was close to the lifetime rate for other marijuana (32.3%) but more than the lifetime rate for cigars (22.6%); while the past 30 days rate for blunts (46.4 %) well-exceeded the rates for other marijuana (32.1%) and cigars (16.2%). Lifetime use of cigarettes was linked to lifetime smoking of cigars and blunts. Ever-smoker cigarettes, in cross-tabular analyses, had an estimated risk of ever cigar smoking of 4.02 (1.68, 9.80); an estimated risk of ever blunt smoking of 2.52 (1.23, 5.18); and an estimated risk of ever other marijuana smoking of 3.07 (1.47, 2.70). Qualitative data indicated that use of these items might represent a continuum of smoking practices. Many respondents linked cigarette smoking to marijuana use, often as a means to enhance the high. Respondents were often unclear on whether or not smoking blunts constituted tobacco use; some described the cigar wrapper as enhancing the high, other described it merely in terms of convenience. Implications for prevention are discussed.

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POS2-143 DISPARITIES IN ACCESS TO NICOTINE REPLACEMENT PRODUCTS AND CIGARETTES IN NEW YORK CITY PHARMACIES

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Background: Although racial and ethnic disparities in smoking prevalence have been eliminated, a socioeconomic gradient persists. Reasons for this are unknown, but may reflect easier access to cigarettes and/or diminished access to pharmacotherapy in retail pharmacies.

Objective: To survey New York City pharmacies to study the availability of tobacco products and nonprescription nicotine replacement therapy (NRT), stratified by racial, ethnic, and socioeconomic characteristics of the surrounding neighborhoods.

Methods: A registry of retail pharmacies was obtained from the state Department of Health. Within the city’s five boroughs, 30% of all pharmacies were chosen at random. Surveyors visited each, recording the availability of tobacco products and nonprescription NRT, product placement, and the presence of advertisements within the store for either. Of all pharmacies, 10% were visited independently by two surveyors to check for interrater reliability.

Census block data were obtained from www.census.gov, and 0.25-mile buffer zones were constructed around each pharmacy. Areal weighting was used for all GIS analyses. Analyses were performed with SPSS 13.0 (SPSS, Chicago, IL) and ArcGIS 9.1 (ESRI 2005, Redlands, CA).

Results: Of 646 pharmacies sampled, 623 (96.4%) had complete data available. 89.6% sold any form of NRT, and 46.3% sold cigarettes. Individuals who were non-Hispanic white, living above the poverty level, or with a high school diploma were more likely to live near a pharmacy selling both nonprescription NRT (ORs 1.01, 1.04, 1.03, respectively) and cigarettes (ORs 1.02, 1.06, 1.05, respectively), with lower bound of all 95% CI >1. The proportion of agreement for the sale of NRT and cigarettes was, respectively, 0.95 and 0.99.

Conclusion: Weak but statistically significant racial and socioeconomic disparities exist in access to nonprescription NRT in New York City pharmacies. There is a reversed disparity in access to cigarettes, but the model does not adequately account for access to cigarettes from all types of retail outlets. These results may explain some of the excess prevalence of cigarette use in these populations.

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POS2-144 CROSS-COUNTRY COMPARISON OF THE PREVALENCE OF SMOKE-FREE PUBLIC PLACES AND SUPPORT FOR SMOKE-FREE POLICIES: FINDINGS FROM THE INTERNATIONAL TOBACCO CONTROL POLICY EVALUATION PROJECT

Ron Borland, Ph.D.*, The Cancer Council Victoria; Geoffrey T. Fong, Ph.D., Pete Driezen, M.Sc., and David Hammond, Ph.D., University of Waterloo; Andrew Hyland, Ph.D., Roswell Park Cancer Institute; Ann McNiel, University of Nottingham; Steven Hamann, ThaiHealth Tobacco Research Centre; Maizurah Omar, National Poison Centre, Universiti Sains Malaysia

Smoke-free policies represent a critical feature of a comprehensive tobacco control program. The Framework Convention on Tobacco Control calls for effective measures to reduce or eliminate tobacco smoke. This paper presents data on prevalence of smoke-free public places and on adult smokers’ attitudes about and support for smoke-free policies, gathered from the International Tobacco Control Policy Evaluation Project (ITC Project).

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POS2-145 ATTITUDES, KNOWLEDGE AND BEHAVIORS REGARDING ENVIRONMENTAL TOBACCO SMOKE AND CLEAN INDOOR AIR POLICIES

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Reducing the harm caused by tobacco use is a public health priority, and increasingly a focus is to reduce exposure to environmental tobacco smoke (ETS). While considerable resources have been dedicated to educating the public on the adverse effects of smoking and the advantages of smoking cessation programs, there have not been comparable campaigns describing the health consequences of exposure to ETS. In this regard there are likely considerable differences in knowledge, opinion, and behaviors related to CIA policies in the general public. To examine the range of opinions, knowledge and behaviors about the health effects of tobacco use and ETS, a survey was developed and administered to 701 community residents in a mid-size midwestern city. The sample consisted of 415 females and 286 males of which 18.5% were current smokers, 27.9% were former smokers, and 53.6% never smoked. Men and women were different in the following variables (p < .01): smoking rules at home, and preferences for smoke-free workplaces, restaurants, and bars. There were no differences in rules for smoking in the presence of children, or in how smoking was treated at home. Smoking was not found to be more often, less often, the same. Significant differences (p < .01) between men and women’s ratings of agreement or disagreement were found with the following statements: exposure to secondhand smoke causes cancer; smoke from other people’s cigarettes is harmful to adults; hating how one’s clothes smell after being around cigarette smoke; being bothered when around other people’s cigarette smoker. Our study showed that there is general support for smoke-free environments (work, bars, and restaurants) and an understanding of consistent agreement about the dangers of ETS and dislike for being in the presence of ETS. Additionally, women’s attitudes are more favorable to CIA policies and tobacco control than men.

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POS2-146 SCIENCE, ADVOCACY AND POLICY: THE CASE OF SMOKE-FREE PLACES

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This paper uses qualitative research to better understand how science influenced the growth of smoke-free places and reductions in second-hand smoke (SHS). It is part of a broader agenda to enhance Tobacco Control’s use of science to help understand an issue, and to then use this understanding to inform action. The relationship between science and SHS advocacy/policy activities is non-linear. Scientific research was often preceded by advocacy/policy initiatives and where research validated assumptions about SHS (e.g., via dose-response studies) or confirmed extra SHS harms (e.g. heart disease) existing advocacy/policy thrusts were reinforced producing a “virtuous cycle.” Some jurisdictions exploited the fruits of this virtuous cycle establishing comprehensive bans quickly. Heterogeneous, mainly non-science variables, mediating between the science and its outcomes were crucial. The need to align with political systems appeared particularly important in determining how and when smoke-free policies were implemented. For example, in the US successful SHS action has typically been “bottom up”, with most activity originally at local level and with notable exceptions (e.g., California) only more recently at State level. There has been little National action. In contradiction, in countries that follow the WHO rules at home, and preferences for smoke-free workplaces, restaurants, and bars. This paper uses qualitative research to better understand how science influenced the growth of smoke-free places and reductions in second-hand smoke (SHS). It is part of a broader agenda to enhance Tobacco Control’s use of science to help understand an issue, and to then use this understanding to inform action. The relationship between science and SHS advocacy/policy activities is non-linear. Scientific research was often preceded by advocacy/policy initiatives and where research validated assumptions about SHS (e.g., via dose-response studies) or confirmed extra SHS harms (e.g. heart disease) existing advocacy/policy thrusts were reinforced producing a “virtuous cycle.” Some jurisdictions exploited the fruits of this virtuous cycle establishing comprehensive bans quickly. Heterogeneous, mainly non-science variables, mediating between the science and its outcomes were crucial. The need to align with political systems appeared particularly important in determining how and when smoke-free policies were implemented. For example, in the US successful SHS action has typically been “bottom up”, with most activity originally at local level and with notable exceptions (e.g., California) only more recently at State level. There has been little National action. In contradiction, in countries that follow the WHO

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Objectives: This study describes the density of tobacco retailers and quantity of cigarette advertising near California high schools and examines their associations with adolescent smoking prevalence.

Method: The 2005-2006 California Student Tobacco Survey (CSTS), a biennial survey of 24,875 students attending 135 randomly selected high schools, was used to estimate the prevalence of smoking in the past 30 days. Using state licensing data, we geocoded all tobacco retailers in the school neighborhoods, defined by a 1-mile radius from each school. In addition, trained observers visited a random sample of the stores (n=426) in order to quantify and describe cigarette advertising and promotions near high schools. Tobacco retailer density was calculated as the number of stores per 100 residents ages 10-17. Regression estimates were computed in order to examine associations of retailer density and advertising quantity with the prevalence of current smoking, adjusting for confounders such as neighborhood socioeconomic condition.

Results: California high school neighborhoods contained an average of 18 tobacco retailers (SD=20, Max=133) - the equivalent of 1 store for every 100 residents ages 10-17. Tobacco retailers contained an average of 18 cigarette ads per store (SD=18, Max=82). The average prevalence of current smoking in the 135 high schools was 15.5% (SD=5.0 Max=29.4) and it increased with the density of tobacco retailers in the school neighborhood after adjusting for neighborhood SES and other confounders. An increase of 1 store per 100 residents ages 10-17 predicted a 1.5 percentage point increase in the prevalence of current smoking (e.g., from 15.5% to 17.0%). Smoking prevalence was not associated with the quantity of cigarette advertising near schools or with the proximity of the nearest tobacco retailer to school.

Conclusion: The density of tobacco retailers in a school neighborhood may promote youth smoking by increasing the availability and visibility of cigarettes.

This research was funded by the California Tobacco-Related Disease Research Program.

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POS2-149
ENVIRONMENTAL SMOKING, COGNITIONS, NICOTINE DEPENDENCE, AND READINESS TO QUIT SMOKING: A COMPARISON BETWEEN ASTHMATIC AND NON-ASTHMATIC ADOLESCENTS

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Objective: Although smoking cessation by asthmatics is often strongly recommended, no studies so far have studied predictors of smoking cessation or readiness to quit in asthmatic samples. In addition, adolescent research on nicotine dependence in relation to smoking-related cognitions and readiness to quit is almost completely lacking. Differences were studied between adolescents with and without asthma in correlations and means on social-environmental smoking, smoking-related cognitions (pros of smoking and quitting, self-efficacy and nicotine dependence and craving, and readiness to quit smoking).

Methods: The data pertain to a large, national cross-sectional study of 10,265 Dutch adolescents. For the present study, we included 1393 regular smokers, among which 97 adolescents who had asthma (defined as self-reported asthma diagnosed by a physician). Only those adolescents were selected who reported to smoke at least weekly. Structural equation modeling was used for an analysis.

Results: The most consistent difference between adolescents with and without asthma concerned the negative relation between the pros of smoking and readiness to quit which appeared to be stronger among adolescents with asthma. Moreover, best friends' smoking seemed to be more related to smoking-related cognitions of asthmatics than of non-asthmatics. On all other predictors, adolescents with and without asthma hardly differed in mean scores or in their association with readiness to quit. Furthermore, nicotine dependence and craving appeared to be strongly positively related to the pros of smoking and self-efficacy to resist smoking, even more so than to readiness to quit.

Conclusions: The present results suggest that asthma-specific smoking interventions should target smoking-related cognitions and best friends' influence more intensively than would be necessary for non-asthmatic adolescent smokers. In addition, efforts need to be made to lower or nullify the degree of nicotine dependence craving. These factors pose a high risk for smoking-related cognitions and readiness to quit in both asthmatic and non-asthmatic adolescents.

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POS2-153 STATE-LEVEL YOUTH ACCESS LEGISLATION AND INDOOR SMOKING RESTRICTIONS AMONG SCHOOL-AGED CHILDREN

To examine the effect of state-level youth-access tobacco and the Clean Indoor Act on the prevalence of cigarette smoking in school-aged children. A cross-sectional design with a sample of 14,418 youths living in the US in grades 6 thru 10 from the 2001-2002 Health Behavior in School-aged Children Survey (HBSC). Secondary data analysis was employed. In bivariate analyses, packaging, photo identification, vending machines, free distribution, and statewide enforcement were positively associated with smoking prevalence. For the air indoor variables, enforcement was the only provision that was not associated with smoking prevalence. Children and adolescents who live in states with no restrictions on vending machine sales versus those who live in the highest level of restriction are twice as likely to be daily smokers. Conversely, a child who lives in a state with no restrictions on the distribution of tobacco products samples is twice as likely to become a daily smoker in comparison to a child who lives in a state with the highest restriction; lack of enforcement was a significant predictor of daily use. The data suggest the role of indoor law as a reflection of smoking norms for school-aged children. The results illustrate the importance of enforcing state-level legislation and indoor smoking to prevent daily smoking among youths. More interventions are needed to prevent the initiation of cigarette smoking in this population.

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POS2-154 TARGETING AFRICAN AMERICAN NON-SMOKERS TO INITIATE HOME SMOKING RESTRICTIONS: A QUALITATIVE INQUIRY
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An innovative approach to reducing household environmental tobacco smoke and motivating smokers to quit is to train adult non-smokers living in the home to promote smoking behavior change. African Americans (AA) smokers are at high risk for tobacco-related morbidity yet are less likely to seek treatment/successfully quit. Focus groups were conducted with African Americans to assess attitudes/beliefs regarding the use of an existing relationship with an adult non-smoker to assist in smoking cessation efforts. Four groups were conducted with smokers living with a non-smoking adult (n=26) and four with non-smoking adults living with a smoker (n=27). Participants (n=53) were 67.9% female, middle-aged (45.8 years; SD=12.0), with 11.8 (SD=1.51) education years. 37.7% had no existing home smoking restrictions (HSRs). Smokers smoked 17.6 (SD=12.4) cpgd, had 3.0 (SD=3.13) past year quit attempts and were motivated to quit (7.08/10, SD=2.91). 77.8% of non-smokers were interested in setting HSRs and 81.5% were willing to help their smoker quit. Qualitative data indicate that smoking has a negative impact on the relationship between cohabitating non-smokers and smokers. When HSRs exist, they are often suggested/endorsed by the non-smoker. Smokers are interested in receiving cessation assistance from a non-smoker in their home and enthusiastic about a program designed to provide education on cessation skills (i.e., education regarding nicotine addiction/pharmacotherapy, motivating smoking behavior change, positive communication skills). AA non-smokers living with a smoker may be an appropriate target to motivate smoking behavior change in another.

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POS2-155 HIGH LEVELS OF ENVIRONMENTAL TOBACCO SMOKE EXPOSURE AMONG KOREAN AMERICANS
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Background: Korean Americans have one of the highest smoking rates among men and therefore are potentially at grave risk for environmental tobacco smoke (ETS) exposure and related diseases, but little is known about the actual extent of ETS exposure. Objectives: To estimate the extent of ETS exposure among Korean-Americans and to determine socioeconomic and behavioral characteristics that are associated with reduced ETS exposure. Methods: Analysis of cross-sectional data from a bilingual (English/Korean) study of tobacco behaviors collected during 2001-2002 by telephone interviews with 2,830 Koreans American adults in California. Results: Early results show that although 82% of the respondents (67% of males and 95% of females) were non-smokers, 66% of respondents had family members who were smokers and 78% had friends and other associates who smoked, suggesting many smokers in homes for ETS exposure. For the air indoor variables, respondents' average ETS exposure was 3 cigarettes/day, with the highest levels occurring in the workplace. The greatest exposures were among the youngest respondents. In addition to ETS exposure (5 cigarettes/day) was significantly higher than women's (1 cigarette/day, in all settings. Being married and home smoking restrictions were associated with lower ETS exposure, and alcohol consumption was higher ETS exposure, but income, education level, and children present at home did not affect ETS exposure. Conclusions: Korean Americans live in an environment where an association with a smoker is pervasive. Understanding the epidemiology and dynamics of ETS exposure among Korean Americans will be crucial for designing culturally-sensitive interventions and effective policy to curb ETS exposure.

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POS2-156 TOBACCO SMOKE POLLUTION EXPOSURE IN HOSPITALITY VENUES AROUND THE U.S. AND THE EFFECT OF SMOKEFREE AIR POLICIES

Background: In the most recent comprehensive report, the U.S. Surgeon General concluded that tobacco smoke pollution (TSP) is a cause of heart disease and lung cancer, as well as sudden infant death syndrome, acute respiratory infections, ear problems, and more severe asthma in exposed children. Hospitality venues typically have the highest TSP levels of all workplaces and are a source of significant TSP exposure for workers and venue patrons. Methods: A study of indoor air quality in 790 hospitality venues was conducted between July 2003 and May 2006 in 20 states and Puerto Rico. 609 of the venues were visited one time and places with and without smoke-free air policies were compared. 181 venues were visited longitudinally, before and after the implementation of a community-wide smoke-free air law. Fine particulate matter (PM2.5) was used as a marker of TSP levels and was measured with a continuous real-time laser photometer, the TS1 Sidepak AMS10. Venues including bars, restaurants, pool halls, bingo halls, bowling centers, and country clubs were visited, and air samples were collected for at least 30 minutes. A calibration factor of 0.32, suitable for TSP, was applied to the data.

Results: Places that permitted indoor smoking (n=448) had mean PM2.5 levels of 2.8 µg/m³ ETS on the 10th, 50th and 90th percentiles of 46, 179, and 608 compared to places with no indoor smoking (n=161) that had mean levels of 28 µg/m³ and 10th, 50th and 90th percentiles of 5, 14, and 65 µg/m³. In the longitudinal assessment, places that were smoke-free before (n=140) experienced a 91% reduction in PM2.5 (2.17 to 0.20, p<0.001). Observed compliance with the new smoke-free air laws was 96%. Places that were smoke-free at baseline (n=33) experienced no change in PM2.5 levels (17 to 15, p=0.3). Conclusions: Places that allow indoor smoking typically have harmful levels of PM2.5 according to the U.S. Environmental Protection Agency air quality standards while smoke-free venues typically have good air quality comparable to outside ambient air. Smoke-free air legislation leads to a dramatic reduction in TSP concentrations thereby reducing the occupational exposure of workers and the exposure of patrons as well.

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**POS2-157**

**INFLAMMATORY MARKERS AND SECONDHAND TOBACCO SMOKE EXPOSURE AMONG U.S. WORKERS**


Introduction: Self-reported exposure to secondhand smoke (SHS) has been associated with elevated inflammatory markers in adults. In children, SHS exposure, indicated by elevated serum cotinine, is significantly associated with elevated serum C-reactive protein. The association between SHS (indicated by serum cotinine) and markers of inflammation has not been reported in adults, particularly among workers with secondhand tobacco exposure in the workplace.

Methods: Using the subpopulation of employed participants (20 years and older) who were nonsmokers, we measured secondhand SHS exposure from the National Health and Nutrition Examination Survey (NHANES) 1999-2002, the association between serum cotinine and inflammatory markers (C-reactive protein, fibrinogen, white blood cell count, and homocysteine) was analyzed. The sample was stratified by self-report of workplace SHS exposure. Serum cotinine and inflammatory marker values were log-transformed and expressed as geometric means with 95% confidence intervals (CI). The association between serum cotinine and inflammatory markers was analyzed using simple linear regression.

Results: Geometric mean serum cotinine was significantly higher among nonsmokers reporting SHS exposure in the workplace (0.12 vs. 0.05 mg/dl, p<0.05). Of these inflammatory biomarkers studied, only homocysteine was significantly (p<0.05) associated with SHS exposure as measured by increased serum cotinine in workers regardless of whether they reported SHS exposure in the workplace.

Conclusion: Exposure to SHS in the workplace may result in increased levels of some inflammatory marker levels among workers. Further research is required to determine recommendations regarding workplace SHS exposure and cardiovascular risk factors. These results provide further evidence in support of universal workplace smoking restrictions in order to protect worker health.

This research was supported by a grant from the Flight Attendants Medical Research Institute.

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**POS2-158**

**THAILAND’S SECONDHAND SMOKE EXPOSURE LEVELS COMPARED TO THOSE OF OTHER COUNTRIES**

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Purpose: To collect baseline data on secondhand smoke exposure levels in various indoor work locations in Thailand and to compare those exposure levels to exposure levels in countries on other continents.

Method: As part of the Global Air Monitoring Study, secondhand smoke exposure was measured in public places in Bangkok in February, March and April 2006 using a portable, real time air measurement device that measures particulate matter with a diameter of 2.5 microns or less (PM 2.5). Particles of 2.5 microns or less are mostly due to cigarette smoke. Because of their danger, the US EPA has set a limit of 15 micrograms per cubic meter as the average annual level of PM 2.5 exposure and 65 micrograms per cubic meter as the twenty-four hour exposure limit.

Results: Levels of PM 2.5 indoor air pollution ranged from 7 to 1,598 micrograms per cubic meter. The mean level for all smoke-free localities sampled was 29 micrograms per cubic meter (n=27), and for all localities where smoking was present, 319 micrograms per cubic meter (n=26). 319 micrograms per cubic meter was comparable to levels in other regions of the world, ranging from a low of 263 in countries in the Americas to 370 micrograms per cubic meter in countries in Europe. The mean level in bars was 488 micrograms per cubic meter (n=15). This was comparable to the mean exposure level of 445 micrograms per cubic meter for all bars (n=253) in four other regions of the world (Africa, Americas, Europe, North Asia and the Middle East), including results from twenty countries.

Conclusions: 1) Secondhand smoke exposure levels in enclosed public places in Thailand are not significantly lower than in other parts of the world. 2) The mean exposure level where smoking was present was statistically, significantly higher than results in non-smoking localities (p=0.001, Mann-Whitney U-test), 3) The mean exposure level where smoking was not present was twenty-one times greater than the average annual exposure limit set by the US EPA and exposure levels in bars were extremely dangerous according to existing US EPA standards for short-term exposure.

The research was funded by grants from the U.S. National Cancer Institute/NIH from Roswell Park Transdisciplinary Tobacco Use Research Center (TTURC), P50CA111236, and from the Flight Attendants Medical Research Foundation (FAMRI).

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**POS2-159**

**ATTITUDES AND BELIEFS ABOUT TOBACCO SMOKE POLLUTION AND SMOKE-FREE POLICIES IN FOUR COUNTRIES: FINDINGS FROM THE ITC FOUR-COUNTRY PROJECT**

Andrew Hyland, Cheryl Higbee*, Mark J. Travers, K. Michael Cummings, Roswell Park Cancer Institute; Ron Lorand, Cancer Council Victoria; Gerard Hastings, University of Sterling; and Geoff T. Fong, University of Waterloo

Background: Previous models of secondhand smoke policy adoption have focused on increasing public support to make a case for stronger regulations; however, with the Framework Convention on Tobacco Control calling for nations to adopt stronger regulations, secondhand smoke policy may precede efforts to increase public support. Little is known about how policies may influence public attitudes and support for smoke-free regulations.

Objectives: To describe the varying levels of smoking policies in nationally representative samples of smokers in four countries, and to examine how these policies are associated with changes in attitudes and beliefs about secondhand smoke over time.

Methods: We report data on 5,788 respondents to Wave 1 of the International Tobacco Control Four Country Survey (ITC-4) and who were employed at the time of the survey. A cohort of these respondents was followed up with two additional survey waves approximately 12 months apart. Respondents’ attitudes and beliefs about secondhand smoke as well as self-reported policies in their workplace and bars and restaurants in their community were assessed at all three waves.

Results: The level of comprehensive smoke-free policies in workplaces, restaurants in their community were assessed at all three waves. Little was observed across each country.

Conclusions: Comprehensive smoke-free policies are increasing over time and stronger policies are associated with more favorable attitudes about secondhand smoke.


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**POS2-160**

**AN ANALYSIS OF COMMERCIAL ANTIQUE POSTCARDS (1899-1920): PORTRAYING THE SOCIETAL EVOLUTION AND GROWING ACCEPTANCE OF WOMEN’S SMOKING BEHAVIORS**

Arden G. Christen, D.D.S.*, Joan A. Christen, M.S., Indiana University School of Dentistry

Early in the 20th century, millions of U.S. and European printed postcards covering a wide variety of topics were shipped annually to worldwide markets. Under scrutiny, these cards provide a valuable source of information regarding societal issues and trends of tobacco use. We have accumulated 133 antique, commercial postcards, which portrayed women smoking. Dated between 1899 and 1920, these cards are from 11 countries, are listed here by production percentage: United States (29%); England (23%); France (20%); Germany (19%); and Belgium (4%). Algiers, Austria, Italy, Mexico, The Philippines and Tunisia each produced about 1%. In spite of strong moral influences, which actively opposed cigarette use by women during this period, these postcards did not present an anti-tobacco message. They treated female smokers with sympathy and understanding. Women were not chastised or judged for engaging in this rebellious behavior. Three major tobacco-related postcard themes for women smokers were: romance, fantasy and emancipation. In our collection, 78(59%) depicted men and women smoking together in obvious romantic situations. Thirty-six cards illustrate men experiencing smoking reveries (daydreams) about women as they smoked. In 7 instances, women engaged in tobacco reveries. Beautiful, independent, fashionable and successful society women who smoked were now role models for women’s rights and emancipation. By 1918, women in America were well on their way to achieving smoking freedom.

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POS2-161 UNDERSTANDING THE INFLUENCE OF THE MALAYSIA-WIDE MEDIA CAMPAIGN “TAK NAK” ON INTENTIONS TO QUIT AND PERCEIVED RISK OF SMOKING: FINDINGS FROM THE ITC SOUTHEAST ASIA SURVEY

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“Tak Nak” meaning “say no” was a nationwide media campaign launched in February 2004 by the Prime Minister of Malaysia in order to reduce the prevalence of smoking and smoking related morbidity and mortality. It was the first-ever Malaysian national anti-smoking campaign. The “Tak Nak” information and attitude/belief-change efforts were communicated through multiple media channels/television, newspapers, magazines, radio, cinema billboards, and through collateral items such as t-shirts. We analyzed data from the baseline wave (Jan-Mar 2005) of the ITC Malaysia Survey, an ongoing cohort survey of a nationally representative sample of adult smokers (18 years and older) in Malaysia (N=2,006) to understand the relation between reported exposure to the “Tak Nak” campaign and intentions to quit. The zero-order relation between “Tak Nak” exposure and intention to quit was significant (p=.03, one tailed). To understand the relation between reported “Tak Nak” exposure and quit intentions, mediational analyses was used. This relation was mediated by, in part, perceived risk (“In the last month, how often, if at all, did you think about the harm you smoking might be doing to you?”) and fear (“How worried are you, if at all, that smoking will damage your health in the future?”). There were significant relations between “Tak Nak” exposure and perceived risk (p=.042), and between “Tak Nak” exposure and fear of the harms of smoking (p<.001). Next, there were significant relations between perceived risk and intentions to quit (p<.001), and between general fear of smoking and intentions to quit (p=.012). Taken together, Malaysian smokers who reported being more exposed to the “Tak Nak” campaign had higher levels of perceived risk of the health harms of smoking and more likely to worry (feel fear) of smoking, and perceived risk and worry, in turn, were associated with having intentions to quit. The conclusions of these analyses are limited by the cross-sectional nature of the data, but they suggest that the “Tak Nak” campaign was associated with greater quit intentions through both enhancing perceived risk and increasing fear/worry about the health consequences of smoking.

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POS2-162 IMPROVED TARGETING OF CESSATION MESSAGES: ANALYSIS OF HEALTHSTYLES AND CONSUMERSTYLES SURVEYS ON SMOKERS USE OF MASS AND SMALL MEDIA

Linda L. Pederson, David E. Nelson, Centers for Disease Control and Prevention; Meg Gallogley, Matt Barry, Danny McGoldrick, Campaign for Tobacco Freed Kids

Smoking cessation is a major component of tobacco control efforts in public health. Better targeting of smokers through different communication channels with cessation messages is needed. We analyzed data from a nationally representative consumer mail survey of adults aged 18 years. Data came from the 2002-2003 HealthStyles and ConsumerStyles proprietary consumer databases (n=15,310). Smoking prevalence, confidence in quitting, and plans to quit within 6 months among adults were analyzed by mass media exposure, Internet use, leisure activities, spectator sports, and retail store shopping. Cigarette smokers were more likely to be heavier users of television and radio and less likely to read newspapers or use the Internet. Smoking prevalence exceeded 30% for regular listeners to alternative/progressive rock or hard rock radio genres; regular viewers of Cinemax, TNN, Comedy Central, The Movie Channel and Sci-Fi channel; regular viewers of the Simpsons, King of the Hill, or That 70s Show; readers of National Enquirer, Hot Rod, Outdoor Life, and Vogue magazines; and fans of car racing, wrestling, and boxing. More than 40% of all smokers shopped at Walmart, K-Mart, Dollar General, Family Dollar, and Home Depot stores in the past 3 months. Smokers who were highly confident in quitting and planned to quit in the next 6 months were regular listeners to all news, religious/gospel, or rhythm and blues radio genres; regular viewers of the BET channel; and readers of Cosmopolitan, Parents, or People magazines. We found differences between smokers and non-smokers, and confidence and plans to quit smoking, by communication channels. Findings provide insights for planning to more effectively reach smokers and identify new partners for collaboration.

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POS2-163 SURVEILLANCE OF WESTERN NEW YORK TOBACCO RETAILER MARKETING PRACTICES


Objective: To determine the extent of tobacco product marketing and promotion at the point-of-purchase in the New York State Counties of Erie and Niagara. The findings of this assessment will serve as the foundation for an education-based interventional campaign with subsequent follow-up analyses centered upon encouraging retailers to adopt responsible tobacco product marketing practices.

Methods: A random sample of 437 retail outlets from the New York State Department of Tax and Finance list of licensed tobacco retailers were assessed in June and July 2006. The assessment form was completed on-site by trained raters and included questions pertaining to tobacco product advertising, governmental age-of-sale signage, marketing and special promotions, and counter-marketing.

Results: Nearly 97% of the retailers had interior tobacco product advertising, with 100% of all convenience, gas-only, and pharmacy/dual retailers having some form of interior tobacco advertisements. Fifty-five percent of retailers had some form of exterior tobacco product advertising, with 12% of gas-only retailers having 20 or more single tobacco advertisements. Fifty-five percent of retailers had interior governmental age-of-sale signage, while only 3% had exterior age-of-sale signage. Ninety-one percent of retailers were found to have some form of interior tobacco price marketing or special promotions. Only 2% of retailers had evidence of interior tobacco counter-marketing.

Conclusions: The findings suggest that tobacco industry marketing and promotion is nearly ubiquitous in retail outlets in Erie and Niagara Counties. Reducing the extent of tobacco marketing and promotion at the point of purchase may be an effective way of reducing tobacco consumption and the incidence of tobacco related morbidity and mortality in our community.

Funding provided by the New York State Department of Health.

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POS2-164  POPULATION SURVEY ON THE TOBACCO RETAIL ENVIRONMENT IN CANADA
Denis Choinière*, Paula Colwell, Kim Hinds, Joseph Given, Ph.D., Tobacco Control Programme, Health Canada.

In 2005, we conducted a baseline survey to obtain quantitative data regarding smokers' and non-smokers' attitudes, beliefs, and behaviours associated with the tobacco retail environment in Canada. More specifically, objectives of the study included: - Assess current knowledge, attitudes and behaviours associated with the tobacco retail environment; - Investigate whether smokers and non-smokers see limitations between smoking, displays at retail, and availability of tobacco products; and - Examine views and attitudes towards possible modifications to the tobacco retail environment. A total of 4,048 telephone interviews were conducted by Corporate Research Associates with a representative sample of adult Canadians who were old enough (i.e., 18 or 19 years of age and older) to be legally sold tobacco products to, according to the laws of the province in which they were a resident. In terms of the most important factor in determining where to purchase cigarettes, convenience trumps all others, and a location close to home is even better. Specifically, one-half of all smokers say convenient geographic location is the most important factor, followed by price with one-third saying it is most important. Perhaps not surprisingly then, nationally, convenience stores are the primary place of purchase for most smokers. Notably, younger smokers (i.e., 18 to 24 years of age) are significantly more likely than older smokers to purchase cigarettes at convenience stores. One-third of smokers say if they had to travel further to purchase cigarettes they would smoke fewer cigarettes, and younger smokers particularly so. The typical wall of cigarettes in a retail establishment is clearly perceived to be a form of advertising. Six in ten Canadians think there should be some form of restriction on the retail display of cigarettes. There is reasonably strong support for establishing specific limitations on where cigarettes can be sold, particularly in relation to youth. Support for limiting the types of establishments that can sell cigarettes is moderate and increases somewhat when limiting youth access is specified as an objective.

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POS2-165  TOBACCO CONTROL MASS MEDIA CAMPAIGNS: WHO'S WATCHING IN ONTARIO?
LM Diemert1,2, JC Victor1,3, S Bondy1,3, KS Brown1,3, J. Cohen1,2, R. Ferrence2,4, J. Garcia1,2, P. McDonald1,3, S. O'Connor1,2, P. Selby1,2, T. Stephens1; Ontario Tobacco Research Unit; 1University of Toronto; 2University of Waterloo; 3Centre for Addiction and Mental Health

Tobacco control mass media (MM) campaigns are key elements of comprehensive tobacco control strategies, used by governments, public health units and non-governmental organizations to help promote smoking cessation, reduce initiation, and influence public support for tobacco control interventions. We discuss aided recall of various MM campaigns aired in Ontario, Canada in 2005. Data were compiled from the first wave of the Ontario Tobacco Survey, July-December 2005 (N=1251, response rate=57%), a RDD longitudinal survey of adult smokers and cross-sectional survey of non-smokers in Ontario. Respondents were asked 30-day aided recall of four public awareness campaigns (“Bob”, “Heather Crowe”, “smoke-free homes”, and “stupid.ca”). At the time of data collection, “stupid.ca” was the only active campaign and targeted to youth. Recall of MM campaigns was compared with demographic, geographic and smoking related characteristics using design-based chi-square tests.

Eighty-six percent of Ontario adults reported seeing at least one of the public MM campaigns. Recall varied from 37% (“Bob”) to 63% (“Heather Crowe”). Recall of “Bob” was significantly lower than recall of all other campaigns, while recall of “Heather Crowe” was significantly higher. Aided recall of three of the campaigns did not vary by age, sex, and smoking status; however, recall of “stupid.ca” was higher among adults aged 18 to 24, males, and current smokers (p<0.05). There were no regional patterns in recall of these MM campaigns. While there was no association with 6-month quit intentions, recall of “Bob” was associated with ever use of other cessation aids such as counseling, hypnosis, acupuncture, and self-help materials (p=0.008). Overall, respondents are able to recall campaigns for at least moderate periods of time. Differential recall across campaigns may be a result of external media factors, whereas differential recall of a given campaign may indicate the campaign message has greater emotional appeal or saliency to a specific group within the population. Future cycles of this study will capture MM campaigns and examine their potential relationship to quit intentions, attempts and successes.

The Ontario Tobacco Survey is an initiative of the Ontario Tobacco Research Unit, which receives funding from the Ontario Ministry of Health Promotion and the Ontario Ministry of Health and Long-Term Care.

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POS2-166  PREDICTORS OF TOBACCO PROMOTION AT POINT-OF-SALE: DIFFERENT STRATEGIES FOR DIFFERENT COUNTRIES?
Joanna Cohen, Ph.D.*, Lynn Weiler, M.H.Sc., Shawn O’Connor, Ph.D., Ontario Tobacco Research Unit; Daniel Robinson, University of Western Ontario; Anne Lavack, University of Regina; Francis Thompson, Non-Smokers’ Rights Association; Joanne Di Nardo, Ontario Tobacco-Free Network

Studies from the U.S. have documented the extent of tobacco advertising and promotion at point-of-sale (POS); three reported differences by store type and one found that storefront advertising was more prevalent in minority, low income communities. We examined predictors of tobacco promotion at POS in Ontario, Canada, prior to the start of the transition phase toward a complete ban on retail tobacco displays. Within 20 cities in Ontario, 24 stores were randomly selected from lists of convenience stores, gas stations and grocery stores. Trained observers captured the range, type and intensity of tobacco promotional strategies at POS. A tobacco promotion index was calculated for each store, taking into account 10 items related to cigarette power walls, number of countertop displays, presence of tobacco near candy, and three items related to cigarette store ads. A conjunction promotion index was also calculated for each store. Bivariate and multivariate analyses were conducted to examine predictors of tobacco promotion at POS. Tobacco promotions were most extensive in chain convenience stores, followed by gas stations with convenience stores, independent convenience stores, gas stations without a convenience store and grocery stores. The extent of tobacco promotions did not differ by total annual store sales, number of employees, the population size of the city, the proportion of neighbourhood residents without a high school diploma, or whether the store was within 100 feet of a school. There were significant differences by city not accounted for by smoking prevalence or whether the city had smoke-free restaurants and bars. Tobacco promotions at POS increased with increasing median neighbourhood household income. Perhaps because of the far-reaching restrictions on tobacco advertising in Canada, cigarette power walls and countertop displays at POS have become quite sophisticated. Similar to the U.S., we found the extent of tobacco promotion varied by store type. Unlike what has been reported previously, however, we found more promotion in wealthier neighbourhoods. Possible reasons for these similarities and differences will be discussed.

This research is funded through the strategic initiative Advancing the Science to Reduce Tobacco Abuse and Nicotine Addiction. This initiative is a partnership of government and non-profit organizations under the coordination of the Canadian Tobacco Control Research Initiative (CTCRI). www.ctcri.ca.

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SRNT ◆ Poster Session 2

POS2-167 TIME TRENDS IN MEDIA ADVOCACY ABOUT TOBACCO IN AUSTRALIA

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Research suggests that news coverage of tobacco issues can have direct and indirect effects on smoking behaviour, but it is rarely systematically monitored. We coded tobacco-related articles from all Australian national and state capital daily and Sunday newspapers from 2001-2005 using a coding system with high inter-rater reliability. Of 5139 articles, 74% were hard news articles, 12% letters, 8% columns and 2% editorials. Overall, 52% achieved greater prominence by either appearing in the first 4 pages of the newspaper or being accompanied by an image. News coverage of tobacco issues during this period was dominated by four themes: secondhand smoke issues (31%), health effects (13%), education/prevention (12%) and the tobacco industry (10%). Each article was also coded for the nature of the event covered, in terms of whether it represented progress (66%) or a setback (21%) for tobacco control objectives, or a mixed (8%) or neutral (4%) impact on tobacco control objectives. The ratio of articles reporting on tobacco control progress compared to articles reporting on setbacks varied by year (range 3.0 in 2001 to 4.2 in 2004). In 2004-2005, 21% of articles mentioned one of 17 national or state-based tobacco control advocacy groups, and these were more likely to be prominent articles. Articles reporting on progress in tobacco control or a mixed event were more likely to mention advocacy groups (21% and 31% respectively) than articles reporting on tobacco control setbacks (17%). We calculated media impressions per capita for each state and Australia overall by factoring in newspaper circulation rates and population size. Over this 5-year period, the average Australian would have been exposed to 130 tobacco-related news articles - or one every two weeks. However, there was some variation in the average level of exposure across the years (range 21-30 articles per year) and wide variation between states. While a majority of coverage is positive for tobacco control, some states and some advocates do better than others, providing lessons for improving media advocacy in tobacco control.

This study was supported by Victorian Health Promotion Foundation and the National Health and Medical Research Council of Australia.

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RPOS3-3  EXPRESSION OF HETEROMERIC NICOTINIC ACETYLCHOLINE RECEPTORS IN THE ENTERIC NERVOUS SYSTEM OF THE RAT

Alexandra Garza, Luping Z. Huang, Jong-Hyun Son, Ursula H. Winzer-Serhan*, Department of Neuroscience & Experimental Therapeutics, College of Medicine, Texas A&M University System, Health Sciences Center

Neuronal nicotinic acetylcholine receptors (nAChR) are ligand gated pentameric ion-channels expressed in neurons of the central and peripheral nervous system. The enteric nervous system (ENS) receives cholinergic input via the vagus nerve and nicotinic cholinergic transmission has been established, which suggests the presence of nAChRs. Here the expression of heterogeneous nAChRs was investigated in the gastrointestinal tract. We used receptor autoradiography with the radiolabeled ligand 125I-Epibatidine and in situ hybridization with subtype specific cRNA probes for alpha (alpha2, 3, 4, 5, 6) and beta (beta2, 3, 4) subunits in whole body sections from newborn rat pups. The results showed strong nicotine sensitive binding of 125I-Epibatidine surrounding the stomach and the outer wall of the small and large intestines. The expression of alpha3, alpha5, beta2 and beta4 was detected in the stomach wall and outer lining of the small and large intestines in a pattern similar to 125I-Epibatidine binding. Expression of alpha2 mRNA was detected in the inner and outer stomach wall and in the inner wall of the small intestines. In addition, mRNA expression of alpha4, beta2 and beta4 was located in scattered cells of the small and large intestinal wall. The results confirm the presence of heteromeric nAChRs in the ENS, which seem to be predominantly composed of alpha3, alpha5, beta2 and beta4 nAChR subunits similar to those found in the peripheral nervous system; perhaps with the addition of alpha2 in some areas. It remains to be seen if the ENS nAChRs are a homogenous population of heteromeric receptors or form multiple receptor subtypes.

Supported by NIH grant DA016487-01A1.

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RPOS3-4  EXPRESSION OF NICOTINIC ACETYLCHOLINE RECEPTOR (nACHR) IN THE ADIPOSE-DERIVED CELLS AND DERMIS OF SKIN-DERIVED FIBROBLAST LIKE CELLS

Jong Bin Kim, M.S., Shin Saeng Lim, M.S.*, Heejin Lee, M.S., Dai-jin Kim, M.D., Ph.D., Department of Psychiatry, Holy Family Hospital, Catholic University of Korea, College of Medicine

There have been several reports of expression of nicotinic acetylcholine receptor (nAChR) in cells of various types of tissue such as brain, bronchial, skeletal muscle fibers. However, there has been no published report about of nicotinic acetylcholine receptor in the cells from the adipose derived (AD) and dermis of skin-derived fibroblast like (FD) cells. We cultured from the AD and FD to observe expression of nAChR and then tested if these cells have the ability of neuronal cells. The seventh passaged cells were cultured in medium DMEM with 10% FBS. They expressed neuronal class III B-tublin (Tuj-1) under confocal microscope. These results show that the AD and FD cells have the ability of neuronal cells. We also tested if these cells expressed nAChR by real time PCR with 15 primers on condition with or without nicotine. The AD cells expressed nAChR by real time PCR with 15 primers on condition with or without nicotine. The AD and FD cells have the ability of neuronal cells. These results show that the AD and FD cells expressed nAChR also have the ability of neuronal cells. We observed morphological change and survival after treatment of several dose nicotine if they response on nicotine. Morphological change was observed by phase contrast microscope and survival counted the number of live cells by Neubauer counting chamber with 0.4% trypan blue dye. We could not find change of morphology and difference of survival in condition with or without nicotine. These results show that nicotine in the AD and FD cells may not affect on morphology and survival. Although we could not find difference in morphology and survival in the AD and FD cells, above results may be characteristics of neural cells in the AD and FD cells.

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RPOS3-5

EFFECTS OF NICOTINE ON RAT BRAIN PROTEINS IN THE HABENULA, SUBSTANTIA NIGRA, AND INTERPEDUNCULAR NUCLEUS


The present experiment studied effects of nicotine administration on the protein profile of several rat brain regions: habenula, substantia nigra pars compacta/ventral tegmental area (SnC/VTA), and the interpeduncular nucleus (IP). These brain loci were selected because they: (1) have high nicotine binding affinity (Clarke et al., 1985; London et al., 1985; Härfstrand et al., 1988); (2) are relevant to effects of nicotine (e.g., on attention, motor movement, and reward); and (3) are relevant to therapeutically effective nicotine (e.g., to treat schizophrenia, dementia, and Parkinson’s Disease). The protein profile also is relevant to mechanisms underlying nicotine’s actions. Nicotine’s effects were examined on five different concentrations: 0.054 mg/kg, 0.18 mg/kg, 0.54 mg/kg, 1.62 mg/kg, and 5.4 mg/kg. Each concentration was administered intraperitoneally (ip) or subcutaneously (sc); n = 10/sex/group. At each nicotine concentration, brain samples were extracted and analyzed using 2-D gel electrophoresis, which separated the proteins based on isoelectric point and molecular weight. The gels were silver stained to visualize the proteins. Photographed with a Fujifilm Imaging System, and then quantified using Progenesis Software. Three proteins in the habenula and three in the SnC/VTA were identified using MALDI-TOF MS. In the habenula, nicotine administration was associated with increased expression of vimentin and pyridoxal phosphate phosphatase and with decreased expression of creatine kinase, M-type. In the SnC/VTA, nicotine administration was associated with increased expression of a heat shock protein (HSP 90-beta), glucose-related protein (GRP 78) and alpha-internexin. However, no changes in protein expression were found in the IP. Vimentin and alpha-internexin contribute to cell structure. Pyridoxal phosphate phosphatase is involved in amino acid synthesis. Creatine kinase is involved in energy transduction. HSP 90-beta is involved in stress responses. GRP 78 assists in protein assembly.

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RPOS3-7

NICOTINE INCREASES VOLUNTARY ALCOHOL INTAKE IN ADOLESCENT MALE RATS

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The use of alcohol and cigarettes is highly prevalent in today’s society. The combined use of one, or both, of these substances is well documented in humans with estimates of the combined use of these drugs as high as 90% in alcohol-dependent individuals. Initiation of alcohol consumption and cigarette use during adolescence is high, with more than 50% of sustained use in adulthood having begun during adolescence. The purpose of the present experiment was to investigate the effects of nicotine on voluntary alcohol intake in adolescent male rats using sweetened alcohol solutions in a limited access paradigm. Rats were trained with a modified sucrose-fading protocol ending at a 5% sucrose/20% ethanol (SS/20E) solution. Twenty minutes before access to alcohol, adolescent male rats were administered 0.6 mg/kg/s.c. nicotine or saline. Initial administration of nicotine suppressed voluntary alcohol intake. However, at higher nicotine concentrations, nicotine-exposed adolescent male rats voluntarily consumed more ethanol in a two-bottle choice paradigm relative to saline-treated counterparts. Results from the present experiment demonstrate that nicotine is able to alter voluntary alcohol intake in adolescent male rats, with repeated nicotine administration leading to an increase in voluntary alcohol intake. This change in voluntary alcohol intake may lead to long-term changes in behavior that may persist into adulthood. Future studies should investigate behavioral and neural mechanisms that mediate this pattern of elevated ethanol intake in adolescent animals.

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RPOS3-8

ACUTE EFFECTS OF SYSTEMIC NICOTINE ADMINISTRATION IN THE ZEBRA FINCH

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Research has shown that neurogenesis occurs in the songbird telencephalon during unique periods of embryonic, juvenile and adult life. This remarkable restriction of postnatal neurogenesis to the telencephalon suggests that these new cells may participate in higher associative brain functions such as perception and learning. Magnetic Resonance Imaging and ex vivo autoradiography have been used to study plasticity in songbirds. Additionally, the nicotinic cholinergic system is implicated in a variety of neurological functions such as pain modulation, reward and cognition. Studies have shown that nicotine exposure can lead to modification of cognitive functions. In the zebra finch, nicotine acetylcholine receptors are localized in several song nuclei and the hippocampus, and in vitro research suggests that the nicotinic cholinergic mechanism could play a critical role in long-term potentiation. In this study we focus on acute effects of systemic nicotine administration in the adult male zebra finch. Song production, locomotor activity, body weight and food intake were evaluated following nicotine administration. In addition, Magnetic Resonance Microscopy (MRM) imaging at 21.1 Tesla (900 MHz), which provides higher resolutions for anatomical identification as well as significantly shortened acquisition times was used for in vivo and ex vivo imaging. Brain scans were made before and after nicotine exposure. Our preliminary results indicate the nicotine administration could be used as an animal model to study the effects of systemically administered nicotine. Furthermore, it was shown that low doses of nicotine (0.054 and 0.18 mg/kg) induced decreases in song production and locomotor activity, while food intake was increased; the opposite effect on these parameters was observed when a higher dose of nicotine (0.54 mg/kg) was administered. No differences in body weight were observed between nicotine and control groups. Histological analysis of brain tissue is currently being used to compare the MRM images to evaluate the potential acute effects of nicotine exposure to the zebra finch brain.

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RPOS3-9

CONDITIONED REINFORCEMENT ESTABLISHED WITH SELF-ADMINISTERED NICOTINE

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Although many models of tobacco dependence posit that nicotine (NIC) can establish neutral stimuli as conditioned reinforcers (CRs), there are currently no adequately controlled experimental demonstrations of this phenomenon. The present study employed the acquisition of a novel response technique to investigate whether NIC could establish a CR. Rats were instrumented for drug self-administration and randomly assigned to one of 3 groups (Paired, n=31; Unpaired, n=13; or CS-Only, n=13). Paired rats self-administered NIC infusions (0.03 mg/kg/infusion, base) accompanied by a conditional stimulus (CS) via nose-poke. For CS-Only rats, nose-poke resulted in CS presentation with a saline infusion. For Unpaired rats CS presentations and NIC infusions were equated to the Paired group; each event was passively received and separated by a minimum of 70 s (range 70-110 s, mean 90 s). After 20 conditioning sessions all rats were tested for acquisition of a novel response by extending two levers into the operant chambers. Responses on a randomly determined “active” lever resulted in presentation of the CS. For Paired rats, active lever response rates and the number of CS presentations earned were significantly higher than Unpaired or CS-Only rats, which did not differ from each other. Paired rats were then assigned to one of 3 self-administration conditions: NIC+CS (n=11, NIC infusions accompanied CS), NC-NIC/CS (n=10) and NC-SAL/CS (n=10). For the latter two groups, lever pressing resulted in CS presentations but NIC or saline infusions were yoked to the NIC+CS group. The remaining rats (CS-Only and Unpaired) also received NIC infusions yoked to the NIC+CS group. When the CS had acquired value (i.e., previously paired with NIC) the remaining NIC increased responding and CS presentations earned relative to conditions in which the stimulus had not acquired value (CS-Only and Unpaired). This study is the first to demonstrate that NIC can conditionally increase the motivational valence of non-NIC stimuli. Moreover, once this conditional value has accrued the unconditional reinforcement enhancing effects of NIC can sustain or promote more responding for the CS.

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RPOS3-10

NICOTINE AND BUPROPION HAVE SIMILAR EFFECTS ON RESPONDING FOR REINFORCING NON-DRUG STIMULI

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Nicotine (NIC) has two effects on operant behavior that may contribute to dependence: (1) Primary reinforcement, in which NIC use directly increases further NIC intake; and (2) Reinforcement-enhancing effects, where NIC potentiates the reward value of non-nicotine reinforcers. Bupropion (BUP) is the primary effective smoking cessation pharmaceutical. BUP is a nicotinic acetylcholine receptor (nAChR) antagonist, which may decrease the two reinforcing effects of NIC. On the other hand, BUP is also an agonist of dopamine (DA) and norepinephrine (NE) systems, which may potentiate or substitute for the two reinforcement-related effects of NIC. The present study sought to determine whether BUP has reinforcement-enhancing effects similar to NIC by investigating the effects of BUP on responding for a reinforcing non-pharmacological stimulus. Rats were initially trained to respond on a lever for a moderately reinforcing stimulus (5-s house light off accompanied by a 5-s tone). When response rates stabilized under a fixed-ratio 5 (FR5) reinforcement schedule, rats were randomly assigned to five different conditions [NIC (0.4 mg/kg), saline, BUP (3, 10 or 30 mg/kg)] and began a drug pretreatment phase. Pretreatment with BUP produced a linear dose-dependent increase in responding. However, only rats pretreated with 10 mg/kg BUP or NIC increased responding for the stimulus (i.e., sensitized to the enhancing effects) over seven days of testing. BUP- and NIC-treated rats were then tested with Mecamylamine, a nAChR antagonist [MEC (0.1 mg/kg or 1 mg/kg), Prazosin, an alpha NE antagonist (PRAZ, 0.1 mg/kg, 0.3 mg/kg, or 1 mg/kg), or Propanolol, a beta-NE antagonist (PRO, 2.5 mg/kg, 5 mg/kg, or 10 mg/kg)]. The enhancing effects of NIC, but not BUP, were blocked by MEC. The enhancing effects of BUP, but not NIC, were blocked by PRAZ. PRO had no detectable effects on responding. The results of this study indicate that BUP has reinforcement-enhancing effects similar to NIC. Furthermore, the reinforcement-enhancing effects of NIC and BUP are pharmacologically dissociable. Whereas the enhancing effects of NIC are mediated by nACHR, those of BUP are mediated by alpha-NE receptors.

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RPOS3-11

ADOLESCENT RATS DIFFER BY GENETIC STRAIN IN RESPONSE TO NICOTINE WITHDRAWAL


Malin et al. (1992) developed a procedure to assess nicotine withdrawal in rats. This approach has been used in several laboratories (O’Dell et al., 2004; Phillips et al., 2004; Hamilton et al., 2006; Perry et al., 2006). Recently, differences have been reported in withdrawal behaviors in adolescent versus adult rats within single genetic strains (O’Dell et al., 2006; Willmouth & Spear, 2006). The present series of experiments used Malin’s paradigm to examine nicotine withdrawal behaviors (e.g., body shakes, abnormal grooming and posture) in adolescent male and female rats of two strains — Sprague-Dawley (SD) and Long-Evans (LE). There were a total of 96 subjects: 24 SD males, 24 SD females, 24 LE males, and 24 LE females. Rats were 21–28 days old at the beginning of the experiment. Adolescence in rats spans from 21 to 42 days-old (Spear & Brake, 1983). Rats received 7 days of continuous SC infusion via Alzet osmotic minipumps of saline or 3.16 mg/kg of nicotine hydrogen tartrate (expressed as base). Behavioral observations were made at baseline, during nicotine infusion, one-day post pump removal, and two days post pump removal. Sprague-Dawley male and female adolescent rats that received nicotine had significantly more withdrawal behaviors compared with saline rats one day after pump removal (F(1, 43)=21.96, p<0.001) and two days after pump removal (F(1, 43)=18.24, p<0.001). Long-Evans males that received nicotine had significantly more withdrawal behaviors one day after pump removal (F(1, 22)=12.66, p<0.05), but no significant effects of withdrawal on day two. In contrast, Long-Evans females did not show significant withdrawal behaviors after cessation of nicotine administration. These results suggest genetic differences in the effects of nicotine withdrawal that are apparent in adolescent rats.

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RPOS3-12

PASSIVE IMMUNIZATION AGAINST NICOTINE ATTENUATES NICOTINE WITHDRAWAL SYNDROME IN THE RAT

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Immunization against nicotine reduces many effects of nicotine administration. However, there is less data on the effects of nicotine antibodies on the withdrawal syndrome induced by the termination of chronic nicotine administration. The present study determined whether passive immunization on the last day of continuous nicotine administration would reduce the nicotine withdrawal syndrome or alter the intensity or timecourse of nicotine abstinence syndrome in the rat. Passive immunization is particularly suitable to test these hypotheses, since it permits rapid immunization. It was found that nicotine dependence is already established. The subjects were 14 male Sprague-Dawley rats rendered nicotine-dependent by 7 days of s.c. nicotine bitartrate infusion via osmotic minipump, 3.15 mg/kg/day expressed as the base. On the last day of infusion, 7 rats received 150 mg i.p. of rabbit IgG raised against 3’-aminomethylnicotine-rEPA (NicVAX) and 7 rats received normal rabbit IgG. Twenty-four hours later, the rats were observed for 20 minutes under blind conditions for somatically expressed nicotine abstinence signs. Osmostic minipumps were then removed under halothane anesthesia, and the rats were observed again at 12, 24 and 36 hours after termination of drug infusion. Both treatment groups displayed very few signs prior to pump removal, with no significant difference between groups. The immunized group had far fewer abstinence signs. ANOVA revealed a significant immunization effect on numbers of signs. Post-hoc statistics revealed significant treatment group differences at 24 hours, p<0.05, and at 36 hours, p<0.01. There were significant group differences in general activity and posture, the predominant abstinence sign in this experiment. The results suggest that the presence of nicotine antibodies need not precipitate a premature nicotine abstinence syndrome. It has previously been reported that nicotine antibodies may delay the total elimination of nicotine from the body. The current data suggests that this may reduce the severity of nicotine withdrawal symptoms, particularly in the later stages, a potential benefit in smoking cessation.

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RPOS3-13

NICOTINE WITHDRAWAL IN FEMALE AND MALE ADULT RATS


Malin et al. (1992) developed a procedure to measure nicotine withdrawal in rats. Several laboratories have used this approach and all have reported that male rats display distinctive withdrawal behaviors after receiving and then discontinuing nicotine administration (Malin et al., 1992; O’Dell et al., 2004; Phillips, et al., 2004). Gender differences have been reported in reasons for smoking, amount of smoking, and difficulties quitting (Grunberg, et al., 1991; Perkins, et al., 1999). Two experiments were conducted to examine nicotine withdrawal in female and male adult rats. Experiment 1 was conducted in a dimly-lit environment and in cages with bedding. Experiment 2 was conducted in a brightly-lit environment and in larger cages without bedding. Subjects were 48 Sprague-Dawley adult rats (24 female, 24 male) in each experiment for a total of 96 rats. Subjects received 7 days of continuous SC infusion via Alzet osmotic pumps filled with saline or 3.16 mg/kg nicotine hydrogen tartrate (expressed as base). Behavioral observations of "withdrawal behaviors" (e.g., body shakes, abnormal grooming and posture, eye blinks) were made and recorded at baseline, during nicotine infusion, one day post pump removal, and two days post pump removal, with an additional observation three days post pump removal in Experiment 2. Cessation of nicotine administration caused a significant increase in withdrawal behaviors in females and males in both environments. Male rats displayed more withdrawal behaviors in the well-lit environment in cages without bedding. In Experiment 2, after cessation of nicotine administration, females displayed more withdrawal behaviors than males in the dim-lit environment with cage bedding (Experiment 1). For female rats, the environment had little effect. Therefore, environmental conditions altered nicotine withdrawal behaviors in male but not female rats.

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RPOS3-14  HOUSING ATTENUATES EFFECTS OF NICOTINE ON BODY WEIGHT, FOOD CONSUMPTION, AND ACTIVITY IN RATS

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Environmental enrichment (i.e., presence of toys and other rats within the same non-crowded cage) attenuates effects of acute or repeated acute nicotine on activity in rats (Green et al., 2003; Elliott et al., 2005). The present experiment examined effects of environmental enrichment and chronic nicotine administration on body weight, food consumption, and activity in rats. Subjects were 64 Sprague-Dawley male rats that were 21 days old at the start of the experiment. Upon arrival, rats were placed into one of four housing conditions: no enrichment (1 animal/cage without toys), physical enrichment (1 animal/cage with toys), social enrichment (2 animals/cage without toys), or super enrichment (8 animals/large 3-level cage with toys). The present experiment was divided into pre-drug, during drug, and post-drug phases. During the drug phase, rats received 18 days of continuous SC infusion of saline or 9 mg/kg/day of nicotine dihydrochloride (expressed as base) via Alzet osmotic minipumps. Dependent variables were body weight, food consumption, and several types of activity (e.g., horizontal activity and center time in an open field chamber, running wheel activity). All dependent variables were measured in each of the three phases of the experiment. With regard to body weight: (1) housing enrichment (especially super enrichment) decreased body weight; and (2) nicotine decreased body weight except in super enrichment. With regard to food consumption: (1) nicotine slightly decreased food consumption; and (2) super enrichment attenuated this effect. With regard to horizontal activity: (1) enrichment (especially super) decreased activity; (2) there was no consistent drug effect. With regard to center time: (1) enrichment decreased center time; and (2) super enrichment interacted with post-nicotine effects. With regard to running wheel activity: (1) enrichment (especially super) decreased activity; (2) nicotine increased activity; and (3) super enrichment attenuated nicotine’s effects. Overall, super enrichment attenuated chronic effects of nicotine on body weight, food consumption, and activity.

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RPOS3-15  NEGATIVE AFFECT DURING NICOTINE WITHDRAWAL: INSIGHTS FROM EXPLICIT-CUE AND CONTEXTUAL FEAR CONDITIONING MODELS

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Numerous theorists have suggested one primary motive for nicotine use is to alleviate negative affect experienced during nicotine withdrawal (e.g., Baker et al., 2004, Koob & LeMoal, 2001). A core assertion of these models is that repeated nicotine use produces neuroplastic changes in affect systems, resulting in dysregulated affect during drug withdrawal. Substantial self-report data exist to confirm this thesis for nicotine dependent users. However, human psychophysiological research to corroborate these data and explicate neurobiological mechanisms is limited. In this study, nicotine withdrawn and non-withdrawn dependent smokers completed explicit-cue and contextual fear conditioning tasks. These two tasks were modeled on previously validated animal fear conditioning models with established neuro-circuitry that model fear vs. anxiety, respectively (Davis, 1998). Fear potentiated startle was measured to examine expression of fear/anxiety in these two tasks. Results suggest increases in anxiety but not fear during nicotine withdrawal. Specifically, withdrawn smokers selectively displayed exaggerated contextual fear conditioning but normal explicit-cue fear conditioning. Results are interpreted with respect to affective motivation for nicotine use.

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RPOS3-16  URGES TO SMOKE WHEN DRINKING REDUCED WHEN AMOUNT OF DRINKING IS REDUCED: THREE-MONTH FOLLOW-UP OF THE WWW.STOPSMOKINGCENTER.NET

John A. Cunningham*, Peter L. Selby and Trevor van Mierlo, Centre for Addiction and Mental Health, and V-CC

Introduction: There is a well-established association between smoking and drinking. Smokers who drink alcohol often report experiencing strong urges to smoke while drinking. These urges to smoke have been identified as a trigger to relapse among smokers trying to quit. This presentation will address one question; does the urge to smoke when drinking change over time as smokers reduce the amount they drink or quit smoking?

Methods: Participants of the Stop Smoking Center (www.StopSmokingCenter.net) volunteered to participate in an evaluation of a new personalized feedback tool for problem drinkers (the Check Your Drinking screener; www.CheckYourDrinking.net). Of the 963 who agreed to participate, 732 were current drinkers and were employed in this analysis. These participants were asked about their current smoking status, about the amount they drank, and “When you drink alcohol, do you ever experience a strong urge, desire or thoughts about smoking?” Of these 732 participants, 343 agreed to participate in a three-month follow-up and 138 completed the follow-up (97 providing responses that were linkable to the baseline survey). The three-month follow-up asked the same series of questions about smoking, drinking and urges to smoke when drinking.

Results: (1) Former smokers reported fewer urges to smoke when they drank as compared to current smokers. The longer a person had quit smoking, the less likely they were to report urges to smoke when drinking; and (2) Respondents who reported a reduction in their urges to smoke when drinking from baseline to three-month follow-up (31%, 30/97) reported a greater reduction in their alcohol consumption as compared to those who reported no reduction in their urge to smoke.

Discussion: The association between smoking and drinking can be weakened if the person changes their smoking or their drinking. This finding is important because it argues for the benefits of addressing alcohol as a trigger for smoking in tobacco cessation programs. Online programs, such as the Check Your Drinking screener or the Alcohol Help Center (www.AlcoholHelpCenter.net) may be beneficial for quitters who drink alcohol.

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RPOS3-17  INCREASED PLASMA BRAIN-DERIVED NEUROTROPHIC FACTOR LEVELS AFTER UNAIDED SMOKING CESSATION

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Objectives: Recent animal studies have suggested the nicotine-related alternations of brain-derived neurotrophic factor (BDNF), but the possible role for BDNF in the human samples with nicotine dependence has not yet been investigated. In this study, we explored the differences in the plasma BDNF levels between chronic smokers and healthy nonsmokers and investigated the changes in plasma BDNF levels in chronic smokers after unaided smoking cessation.

Methods: Forty voluntary participants (20 smokers and 20 nonsmokers) enrolled in the study. Using an enzyme-linked immunosorbent assay method, we measured the plasma BDNF at baseline (both groups) and endpoint (only smoker group).

Results: Twelve smokers (60.0%) completed 2-month study. In baseline, ANCOVA with covariance of age showed that the plasma BDNF levels in smokers were significantly lower than those of nonsmokers (F=5.658, p=0.023). The plasma BDNF levels after 2 month smoking cessation had a significant increase compared to those at baseline in smokers (Z=3.059, p=0.002). Conclusion: These findings suggest that BDNF may have some roles in the pathophysiology of smoking behavior. However, adequately powered trials are needed to confirm these results.

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RPOS3-19 CORRELATES OF SMOKING BEHAVIOR IN ALCOHOLICS AND SOCIAL DRINKERS

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Smoking and drinking behavior are highly correlated. However, the relationship between social drinkers and smoking has received less attention. This study was conducted to examine differences in indicators of nicotine dependence based on the levels of alcohol use (alcoholics versus social drinkers) (N=110). Mean differences in expired carbon monoxide levels (CO), FTND, SCQ, and age of onset of regular smoking did not differ between alcoholics and social drinkers. Thus, although alcohol intake increased in alcoholics, mean levels of nicotine dependence indicators were not different from those of smoking controls. Further, contrary to expectations, there were no gender differences or interaction with group on these variables. Regression analyses were performed to examine factors in determining smoking levels other than alcohol consumption. Criterion variables included age of onset of regular smoking, CO, FTND and SCQ, while predictors included gender, demographic and affective variables. Results indicated the age of regular smoking onset was predicted by years of education [F(1,102)=6.38, p<0.01], and that younger regular smokers were more likely to smoke heavily [F(1,88)=8.46, p<0.005]. Negative affect, including Beck Depression Inventory (BDI-II) and state anxiety scores, contributed to significant models [F(2,89)=3.60, p<0.05], [F(2,95)=2.90, p<0.06], [F(2,90)=12.65, p<0.001]. Gender was a non-significant predictor in all analyses. Further, the quantity and frequency of alcohol consumption (QFI) remained a non-significant predictor of CO, FTND, or SCQ. These results suggest that first, with a growing interest in gender differences in nicotine dependence, more sensitive measures may be needed in order to examine this issue. Second, despite common assumptions, individuals with an alcohol use disorder may not have increased nicotine dependence.

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RPOS3-20 CRAVING TRAJECTORIES APPROACHING TARGET QUIT DAY ARE RELATED TO ACHIEVEMENT OF INITIAL (24H) SMOKING ABSTINENCE

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We examined the relationship between craving experienced during ad lib smoking, and subsequent success in smoking cessation. Using Ecological Momentary Assessment, 393 heavy smokers (>15 cpd) recorded their craving during episodes of ad lib smoking for 17 days preceding a target quit day (TQD), using electronic diaries. Participants were randomized to high-dose (35mg) nicotine or placebo patches on TQD, and they continued to monitor their smoking post-TQD for an additional 35 days. Over the full sample, craving increased as TQD approached (main effect of time, p<0.006). We examined whether individual differences in this time trend were associated with differential success in quitting. In log-rank survival analysis (controlling for treatment), estimated individual craving trajectories were significantly related to achieving initial abstinence for 24 hours (p=0.04): the more craving increased leading up to TQD, the less likely participants were to achieve 24h abstinence. Results suggest that craving associated with cigarettes increases as smokers approach TQD, and that such craving impedes quitting. Interventions that attenuate increases in craving prior to TQD might help more smokers achieve initial abstinence.

This research was funded by NIDA grant DA06964. Dr. Shiffman is a co-founder of invivodata, inc., which provides electronic diary services for clinical research.

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RPOS3-21 SMOKING INTERRUPTION: EFFECTS ON PUFF TOPOGRAPHY

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As shown in spaced smoking experiments, smoking topography (puffing behavior) is influenced by the time since the last cigarette. Furthermore, during ad lib cigarette smoking puff topography also changes, however, there have been no experiments where puffing topography is assessed after an interruption in ad lib cigarette smoking. We used topography data from an on-going study of regular daily smokers (n=18). The subjects tested (7 females, 11 males) averaged 42 years of age (19-61 yr) and were African American (9), Caucasian (8), and mixed heritage (1). They consumed a self-reported average of 16 cig/d (7-30 cig/d); smoked for an average of 22 yrs (2-40 yr) and had an average FTND score of 5.4. During the experimental session subjects smoked a single cigarette (not their usual brand) ad lib, through a desktop CReSS topography system. Their smoking was interrupted after the third puff for data collection and a blood draw from an indwelling IV butterfly set. Smoking topography variables were examined on puffs collected before the interruption; the first puff after the interruption; and for the remaining puffs. The interruption interval averaged 86 sec (range 33-215 sec) was considerably longer than the average interpuff interval before (11 sec) or after (22 sec) the interruption. Interruption of ad lib smoking appeared to have minimal effects on topography. For example, Puff Volume, which averaged 62.6 ml before the interruption, averaged 61.6 and 56.2 ml on the first puff after interruption and subsequent puffs, respectively. Puff Duration averaged 3.0 sec before the interruption and 1.4 and 1.2 sec after the interruption, respectively. Finally, Maximal Puff Velocity averaged 63.6 ml/sec before the interruption and 70.3 and 71.0 ml/sec on the first puff after interruption and subsequent puffs, respectively. These data suggest that momentary interruptions in ad lib smoking do not significantly alter puff topography and support the notion that interruption measures during cigarette smoking minimally influence overall smoke behavior.

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RPOS3-22 NICOTINE REDUCES DISTRACTION AND IMPROVES ABILITY TO MODULATE SELECTIVE ATTENTION TO SMOKING-RELATED AND AFFECT-INDUCING STIMULI


The present study examined the hypothesis that nicotine helps smokers reduce negative affect by reducing distractibility and improving their ability to modulate selective attention to affect-inducing stimuli. Fifty-six habitual smokers were each tested on four days with 14-mg nicotine patches and placebo patches, counterbalanced, as a within-subjects factor in a double-blind design. A modified Stroop utilizing negative-affect words, smoking words, and neutral words was presented via computer in blocked format as part of a larger study that involved a variety of tests. As predicted, participants were less distracted by (paid less attention to) the negative content of words while on nicotine patch relative to placebo patch, as indicated by a significant interaction of word type by patch with slower times to name the colors of negative-content words relative to neutral words in the placebo condition. Participants were also slower to name the color of smoking words relative to neutral words, and nicotine improved performance overall. The results are discussed in terms of affect-attention and smoking literatures.

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RPOS3-23  DOES CHEWING GUM HELP WITH STRESS RELATED TO NICOTINE WITHDRAWAL?

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Introduction: It is commonly believed by individuals who smoke cigarettes that smoking reduces feelings of stress. In fact, prior research suggests that stress related to nicotine withdrawal may increase the likelihood of relapse. Taking into consideration that smoking is the number one preventable cause of death in the U.S., finding a healthy product that can be used to help with the stress related to nicotine withdrawal may improve upon existing treatment packages. While prior research has indicated that gum helps with symptoms of nicotine withdrawal for short periods of time in the laboratory, the purpose of this study was to investigate this phenomenon in a smoker’s natural environment and over an extended period of time. We hypothesized that gum chewing would help maintain stress levels despite a significant reduction in smoking over a 1 week period.

Methods: 62 college students were prompted via an alarm to complete surveys on a Personal Digital Assistant (PDA) at 9am, 1pm and 6pm for two consecutive weeks. The two weeks were identical except during week 2 participants were instructed to try and chew gum rather than smoke whenever they felt they needed a cigarette.

Results: Repeated measures ANOVAs indicated that participants smoked less [F(1,61)=6.3, p<.001] and chewed more gum [F(1,61)=12.1, p<.001] on week 2 as instructed. A multilevel analysis (SAS Proc Mixed) indicated no significant change in subjective levels of stress due to nicotine withdrawal across weeks [t(61)=-1.04, p=3].

Discussion: Results indicate that the use of confectionary chewing gum may aid in smoking cessation efforts. Specifically, it appears that when regular smokers in their natural environment are asked to reduce their smoking behavior, chewing gum may help to maintain levels of stress similar to those observed when they are smoking at their usual rates.

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RPOS3-24  SEX DIFFERENCES IN LONGITUDINAL STUDY OF TOBACCO WITHDRAWAL IN COLLEGE STUDENTS

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Initial acute responses to cigarette smoking have been shown to influence likelihood of maintenance of smoking behavior. However, less is known about how experience of withdrawal symptoms over time may influence future cigarette smoking. Males and females have been shown to handle differently to nicotine and appear to smoke for different reasons. There are also sex differences in ability to quit smoking, with male smoking cessation rates exceeding that of their female counterparts. In order to better inform development of cessation technologies, the current longitudinal study sought to test whether male and female smokers differed in their acute withdrawal experiences and responses to nicotine over a period of 3 years. Cigarette smokers (N=211 males, N=189 females) completed 3 laboratory sessions testing withdrawal symptoms, craving, and acute responses to nicotine via cigarette smoking. Controlling for symptoms of depression, sex differences emerged in physical and affective symptoms of withdrawal such that female smokers reported significantly greater overall symptoms of both types of withdrawal at Years 1 and 3, but differed only from their male counterparts on measures of affective withdrawal at Year 2 (all ps<.05). Further, there were significant sex differences in the changes of magnitude of withdrawal over time. Results also indicated gender differences in the acute effects of nicotine, with women experiencing more robust subjective effects in the mood-altering properties of nicotine. This study offers a more specific understanding of the nature of the sex differences in withdrawal symptoms over time and may better guide treatment efforts tailored to women’s and men’s individual needs.

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RPOS3-25  A “SMOKER IDENTIFY” SCALE FOR “LITS” AND REGULAR SMOKERS

Josie Tracy, B.A.*, Thomas Lombardo, Ph.D., John Bentley, Ph.D., Chris Young, B.A, Maureen Flynn, B.A., Patrick Riordan, B.A., University of Mississippi

Smoker identity (SI) is a construct receiving empirical attention since it has implications for smokers’ behavior, response to smoking-related information, and cessation efforts. Although some research suggests that SI strength has predictive validity for regular smokers, few studies examine SI in light and intermittent smokers (LITS). LITS may be less likely to identify as “real” smokers, and thus be less responsive to quit program marketing. The sole standardized SI measure is less applicable to LITS, since it was normed on cessation-seeking heavier smokers. The present study aimed to develop and initially evaluate an 8-item measure of SI designed for use with college-aged LITS and regular smokers. Data from 1,458 usable surveys (92.3% response rate) gathered from a random sample of undergraduate classes were analyzed. Analyses used a subset of the sample (N=298): students who reported smoking at least 100 cigarettes in their lifetimes and also current smoking on some days (SD smokers) or every day (ED smokers). To provide some evidence of the unidimensionality of the scale, a principal components analysis (PCA) was conducted on the 8 items. Eight of the nine items loaded on a single component. As only one item loaded on the second component, that item was deleted and PCA was rerun producing a single component (using the eigenvalue-greater-than-one rule), with loadings all greater than 0.5. Of the 8 items, 7 had loadings > 0.8 and 1 had a loading of 0.93. The 8 items were summed to form a single SI score for all subsequent analyses. Results on several measures supported the validity of the SI scale: 1) SI scores were higher for ED than for SD smokers, 2) SI scores significantly discriminated between purchase habits (cigarettes, pack, smoking others' cigarettes, etc.) and the FTND 1st cigarette of the day item, and 3) SI scores correlated negatively with SI predictions of quitting success on a hypothetical quit attempt in the next 6 months. With more research, this measure may prove useful for guiding both quit interventions and marketing efforts for quit programs.

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RPOS3-26  THE EFFECTS OF TRANSDERMAL NICOTINE ON COGNITION IN NON-SMOKERS WITH AND WITHOUT SCHIZOPHRENIA: A RANDOMIZED PLACEBO CONTROLLED TRIAL


Increasing evidence indicates that the neuronal nicotinic acetylcholine receptor system is dysregulated in schizophrenia and may contribute to cognitive deficits described in this disease. Furthermore, nicotinic agonists may have potential in the treatment of cognitive impairments in schizophrenia. This study investigated the effects of nicotine on attention-biased attentional neglect and working memory in non-smokers with and without schizophrenia. We used a double-blind randomized placebo controlled trial using transdermal nicotine (TNI) and placebo on a subset of non-smokers with a history of schizophrenia (n=32) and healthy controls (n=32). All participants were non-smokers in order to eliminate confounding effects of nicotine withdrawal and reinstatement that may occur in smokers. Subjects received 14 mg transdermal nicotine and identical placebo in a randomized, placebo controlled, crossover design. The primary outcome measure was the Continuous Performance Test Identical Pairs Version (CPT-IP). A cognitive battery was conducted before and 3 hrs after each patch application. Data was analyzed using a repeated measures analysis of variance (ANOVA) with time (pre- versus post-dose) and treatment (nicotine versus placebo) as within subject factors, and group (schizophrenia versus control) as between subject factors. Nicotine improved performance on the CPT-IP in both groups as measured by a reduction in hit reaction time (HRT) (time x treatment interaction F(1,58)=20.35, p<0.0001), HRT standard deviation (F(1,58)=8.23, p=0.006) and random errors (F(1,58)=13.23, p<0.001). In addition, nicotine reduced commission errors on the CPT-IP to a greater extent in those with schizophrenia versus controls (time x treatment x diagnosis effect F(1,58)=8.23, p<0.001). Nicotine reduced commission errors on the CPT-IP in both groups as measured by a reduction in hit reaction time (HRT) (time x treatment x diagnosis effect F(1,58)=8.23, p<0.001). Nicotine reduced commission errors on the CPT-IP to a greater extent in those with schizophrenia versus controls (time x treatment x diagnosis effect F(1,58)=8.23, p<0.001). Nicotine improved performance on a Three Card Stroop task as measured by interference T-score to a greater extent in schizophrenia versus controls (time x treatment x diagnosis interaction F(1,55)=4.87, p=0.033). Nicotine improved attentional performance in both groups and was associated with greater improvements in inhibition of impulsive responses in subjects with schizophrenia. These results confirm previous findings that nicotine improves attention and suggest that nicotine may specifically improve response inhibition in schizophrenia.

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INFLUENCE OF LABORATORY HUMAN SMOKING CONDITIONS ON TAR STAINING INTENSITY AND PATTERNS

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Digital imaging of spent cigarette butts is being investigated as a unobtrusive method for estimating total smoke exposure and vent blocking in cigarette smokers. However, an open question is the extent to which laboratory and field devices used to measure puffing parameters may influence staining intensity and patterns relative to cigarettes smoked without such devices. This is important as the stain measurements are often evaluated against topography measurements as a “gold standard.” The current study examined cigarettes (N=720) smoked using the CreSS desktop unit, CreSSMicro portable unit, and without any measurement device (but videotaped for later coding). Staining was assessed by deriving CIELAB values (L* [Lightness], a* [red-green], and b* [blue-yellow]) at both the center and edges of the mouth end of the butt. L* and a* center provide information about smoking intensity, and the b* ratio (b’/b”-center) can be used as an indicator of filter vent blocking. L* (r=−0.47) and a* (r=0.36) were significantly related to previous puff volume and had their highest scores were higher for CreSSMicro than desktop. L* center scores were marginally affected by measurement procedure [F(2,714)=2.59, p=0.08], while a* center scores were significantly impacted [F(2,714)=5.37, p<0.05], with freely smoked cigarettes showing significantly greater redness than those smoked through either device. B’ratio (blocking) scores were not significantly related to measurement method (p=0.17). Factor analysis of all color scores revealed similar factor loading patterns for all three conditions— one factor for “edge” scores and a second for “center” scores— together explaining approximately 80-90% of variance. Regression factor scores onto measured volume showed that “edge,” “center,” and their interaction significantly predicted total volume, but the R-squared differed significantly between desktop CreSS [R-sq=0.25] and CreSSMicro [R-sq=0.46]. Results suggest that puffing measurement devices may impact tar staining on cigarette butts. Other validation tools not using in-line devices may be needed to evaluate real-world efficacy of stain pattern analysis.

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THE EFFECTS OF SMOKING AND PERSONALITY ON SELECTIVE ATTENTION AS MEASURED BY SKIN CONDUCTANCE AND HEART RATE RESPONSES TO AUDITORY STIMULI

Justin E. Greenstein, M.A.*, and Jon D. Kassel, Ph.D.

Previous studies examining the effect on smoking on selective attention have yielded mixed results, which may be due, in part, to a lack of sensitivity of the measures used and because individual differences, such as personality, have often not been taken into account. Psychophysiological measures, such as heart rate and skin conductance, may serve as more sensitive measures of selective attention because they allow for the assessment of central responses while eliminating the need for peripheral, overt responding. Thus, the present study used heart rate and skin conductance responses to distracting acoustic tones as indirect indices of attention allocation to examine the immediate effects of smoking on attentional processing and, furthermore, examined whether neuroticism and extraversion, which are known correlates of both smoking behavior and attentional processing, moderated this relationship. Smokers who smoked (n=39), smokers who did not smoke (n=38), and non-smokers each completed the Eysenck Personality Inventory and had their heart rate and skin conductance responses to distracting acoustic tones (105 dB) measured after they were instructed to: (1) direct their attention toward the tones, (2) direct their attention away from the tones and toward a visual task, and (3) just sit still (in counterbalanced order). During the visual task, participants evidenced enhanced skin conductance responses (p<0.01) and diminished heart rate responses (p<0.05), indicative of attention being allocated toward the visual task and away from the auditory tones. However, neither smoking nor extraversion nor neuroticism had a significant effect on skin conductance or heart rate responses to the acoustic tones. These findings are consistent with previous research demonstrating that smoking/nicotine does not enhance selective attention in non-deprived smokers and further indicate that neither extraversion nor neuroticism moderates the relationship between smoking and attentional processing.

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EMOTIONAL PICTURES AND NEUROTICISM MODERATE EFFECTS OF NICOTINE ON AFFECT AND ATTENTIONAL BIAS (EYE-GAZE)


We tested the hypothesis that the effects of nicotine on affect are moderated by attentional freedom, emotional stimulii, gender, and neuroticism. Half of the habitual smokers (N=52) were assigned to tasks allowing attentional freedom to look back and forth at two simultaneously presented pictures, while the other 32 viewed single pictures without attentional choice. Picture contents in the tasks were emotionally negative:neutral, negative:positive, positive:neutral, and neutral:neutral. Participants were a nicotine patch on one day and placebo patch on another day. Nicotine reduced negative affect and increased positive affect, but these effects were moderated by neuroticism and task manipulations. Nicotine reduced anger and depression most during the two-choice task in high-neuroticism males and reduced eye-gaze time to negative pictures in high-neuroticism males when there was a positive alternative picture. Overall, the findings support the view that nicotine’s ability to reduce negative affect is moderated by emotional context, attentional freedom, gender, and neurotic traits. These findings are consistent with hypotheses of the Situation by Trait Adaptive Response (STAR) model concerning nicotine’s effects on affect, including the idea that nicotine decreases negative affect to a greater extent in neurotics, especially when the context promotes internally driven information processing. As a result, emotional context counteracts the mitigating effect of nicotine on negative affect.

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RPOS3-31 MODULATION OF AFFECTIVE PRIMING BY NICOTINE

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Affective priming combined with a two-choice picture-viewing task was used to better characterize mechanisms by which nicotine modulates attention and affect. The task involved viewing a nicotine or placebo preparation, a 1000 ms central visual fixation, a 200 ms emotional priming picture (positive, negative, or neutral in valence), a 50 ms mask stimulus, and two faces, at least one of which was emotional (positive, negative, or neutral), were presented in adjacent visual fields to compete for attention. The emotional valences of the faces were either congruent or incongruent with the valence of the priming pictures. Smokers (24 male, 24 female) completed the task in a repeated measures design wearing a nicotine patch on one day and a placebo patch on another day. Consistent with hypotheses, there was a significant Nicotine x Emotional Valence of Priming Picture x Target Picture Valence interaction for the mean number of first eye-gaze saccades. Nicotine (relative to Placebo) and Positive (relative to Neutral) priming pictures increased first gaze-bias toward Positive and Neutral affective faces while reducing first gaze-bias away from Negative faces. Nicotine (relative to Placebo) and Negative (relative to Neutral) primes reduced first gaze-bias toward Negative faces and increased first gaze-bias toward Positive or Neutral faces. Nicotine promoted the strongest first gaze-bias toward Positive and away from the competing Negative faces when primed with Positive (rather than Negative or Neutral) pictures. Affective priming of attentional approach toward Positive or Neutral faces was significant only when Negative faces were competing for attention. Consistent with the STAR model’s hypotheses, nicotine enhanced the fear-induced negative emotional valence of positive and neutral affective pictures and faces. Nicotine and positive priming pictures promoted attentional approach of positive and neutral faces and attentional avoidance of negative faces competing for first gaze attentional bias.

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RPOS3-32 SMOKING CESSATION IN A GROUP OF YOUNG ADULTS IN CANADA — LONGITUDINAL PREDICTORS OF CESSATION FOR MALES AND FEMALES

Magdalena Lagerlund, Ph.D.*, John J. Kovai, Ph.D., Linan Xu, M.Sc., Linda L. Pederson, Ph.D.

The objective of this secondary analysis was to explore what factors measured in grade 6, 8 and 11 could help differentiate between male and female smokers and quitters as young adults. In 1993, 1598 grade 6 students participated in a baseline survey. The cohort was followed in grades 8 and 11 and as young adults in 2002. A self-administered questionnaire was used to collect information including smoking behavior, psychosocial factors and socio-demographics. We analyzed 21-22 year olds who reported smoking >25 cigarettes in their lifetime. Current smokers were those who had smoked at least one cigarette in the past 30 days. Quitters were those who reported that they had quit smoking and had not smoked in the past 30 days. 21% of females and 18% of males were categorized as quitters. Bivariate analyses for each grade were used to screen variables for inclusion in separate multivariate logistic regression models within each grade. Variables with p-values below .15 in those models were all considered in the final models and selected through backward elimination. Smoking history and amount smoked were controlled in the multivariate models. For females, perceived reasons to smoke in grade 6 (OR=.140, 95% CI: 1.09-1.82), and stressful life-events in grade 11 (OR=.126, 95% CI: 1.10-1.46) were significantly associated with young adult quitting in the multivariate models. For males, less likelihood of believing that smoking is addictive, (OR=.051, 95% CI: 0.31-0.83), having a full-time working mother (OR=2.57, 95% CI: 1.37-9.29), and more days missed at school (OR=4.94, 95% CI: 1.42-17.17) in grade 11 were associated with smoking cessation in the multivariate models. Males and females who were ex- experimental or never smokers in grade 6 were significantly more likely to have quit smoking in grade 11. Similarly young adult quitters were likely to have smoked fewer cigarettes in their lifetime. Males and females appear to differ with regard to some factors associated with quitting; however, some variables were also common to both. Interventions could be designed and evaluated that target those individuals who are not likely to quit on their own.

National Cancer Institute of Canada CIHR Strategic Training Program in Tobacco Use in Special Populations.

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RPOS3-33 EFFECTS OF ANGER ON SMOKING CESSATION

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Recent evidence suggests that anger symptoms following a smoking cessation attempt may impede abstinence. Extending this, the current study examined the influence of pre- and post-treatment anger symptoms on abstinence following 8-weeks of smoking cessation treatment that included 21mg nicotine patch therapy and four brief smoking cessation counseling sessions. The state trait anger expression inventory (STAXI; Spielberger, 1988) was administered at pretreatment (2 weeks before the Target Quit Date; TQD) and 1 week after the TQD. Although pretreatment anger was not associated with 8-week abstinence, lower levels of post-quit anger was significantly associated with abstinence after 8-weeks of treatment (t=2.60, p=.01). In a logistic regression model of 8-week abstinence, post-quit anger predicted abstinence (OR=.94; p=.03) when sex, nicotine dependence and pre-treatment negative affect were controlled for. When the anger subscales of feeling, physical and verbal anger were independently considered in the abstinence model, only higher post-quit levels of feeling anger emerged as a significant predictor of 8-week abstinence (OR=.85; p=.01). Finally, a zero-inflated negative binomial regression model (a two component mixture model) was used to examine the effects of anger on self-reported daily cigarette count. The cigarette count portion of this model showed that increased post quit anger (Coef.=.095, p=.01) and pretreatment anger (Coef.=.27, p=.00) were predictive of higher levels of smoking after the TQD when sex, nicotine dependence and day of treatment were controlled for. Together these data suggest that anger may be an important withdrawal symptom that impacts quitting. Future studies are needed to validate these findings and to identify treatment strategies that effectively help smokers reduce and manage post-quit anger.

This study was conducted while Kia Z. Kerrin was at the University of Pennsylvania. Supported by NC/NIH grant # F50-CA084719-09 (Transdisciplinary Tobacco Use Research Center).

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RPOS3-34 SNUS USE AND OTHER CORRELATES OF SMOKING CESSATION IN THE SWEDISH TWINS REGISTRY

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Background: We investigated twelve variables and their interactions as correlates of smoking cessation among regular smokers in the population-based Swedish Twin Registry (STR).

Methods: Detailed information on tobacco use and personal characteristics were available from 14,715 male and female twins 42-64 years old who participated in a screening of the population-based STR and reported being regular smokers in their lifetime. A two-stage statistical modeling procedure was used to examine correlates of smoking cessation. The sample was split at random and significant main effects and interactions identified in the testing set, which was examined in the validation set. Hazard ratios (HR) and 95% confidence intervals (CIs) describe the association between correlates and smoking cessation.

Findings: Twelve main effects were significantly associated with smoking cessation in the testing set; eight were confirmed in the validation set. Of the nine interactions identified in the testing set, only four remained significant when evaluated in the validation set. Hazard ratios were highest for Swedish oral smokeless tobacco (snus) use (HR 2.70, 95% CI 2.30-3.20), >11 years of education (HR 1.57, 95% CI 1.43-1.73) and being married or co-habiting (HR 1.51, 95% CI 1.39-1.63). Snus use was also important in the context of interactions, where low nicotine dependence score, higher socioeconomic status, and greater body size were associated with smoking cessation only among participants who never used snus.

Interpretation: Snus use was the strongest independent correlate of and a significant modifier of smoking cessation. Further studies should investigate the mechanism of this association.

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Cognitions about quitting smoking, such as confidence in the ability to abstain from smoking, may play an important role in successful smoking cessation. Abstinence self-efficacy has been linked with smoking relapse (DiClemente, 1981), as well as quit attempts (Zentner & Borland, 1995). This confidence may be particularly important for individuals with psychiatric disorders, who currently comprise nearly half (44-46%) of the US tobacco market (Grant et al., 2004; Lasser et al., 2000). This study investigates changes in cognitions about quitting smoking for patients hospitalized in a smoke-free psychiatric inpatient facility. Participants were 100 smokers (39% female, 73% non-Hispanic Caucasian) recruited from a university-based adult inpatient psychiatry unit. The primary measure of interest for the purpose of this study was the Commitment to Abstinence Scale (Hall et al., 1990), which assessed participants’ desire to quit smoking, their expectancy of success, and their anticipated difficulty with quitting. An additional item assessed participants’ smoking abstinence goal. Patients filled out the scale soon after admission and again prior to being discharged from the unit. Although no smoking treatment was provided in this observational study, 69% of patients used NRT during hospitalization. Patients were hospitalized an average of 7.5 days (SD=5.65, Range=2-38) and significant differences were found between patients’ initial thoughts and their thoughts after hospitalization in the smoke-free environment. Participants reported having a greater expectancy of success with quitting, and lower expectation of difficulty to keep from returning to smoke upon discharge. Furthermore, at hospital discharge, patients were more likely to have a goal related to changing their smoking behavior compared to their reports at intake. The results of this study have implications for the implementation of policies that ban smoking in psychiatric settings.

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WHY DO QUIT ATTEMPTERS PREMATURELY DISCONTINUE NICOTINE REPLACEMENT THERAPY: DEMOGRAPHIC DIFFERENCES AND IMPLICATIONS

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Background: Nicotine replacement therapy (NRT) increases successful quitting by 1.5 to 2 times. However, studies show that well over half of NRT-users do not comply with optimal treatment regimens. We examined reasons for discontinuation, usually prematurely, of NRT in order to guide the design of interventions to increase NRT compliance.

Methods: From the Colorado 2005 Adult Tobacco Attitudes and Behaviors Survey (TABS), 398 quit attempters who utilized NRT in their most recent quit attempt data comprised the study population. Weighted descriptive and logistic and linear regression analyses were utilized to examine demographic differences in reasons for discontinuing NRT and length of time on NRT as well as the effect of reason for discontinuation on quit intentions and intent to use NRT again.

Results: The most common reason for discontinuing NRT was starting smoking again (31.7%), followed by not liking the effects (15.8%), NRT not helping smoker quit (13.5%), quitting smoking (9.4%), and cost (4.9%). Poverty status and age were highly associated with reporting reasons other than quitting smoking for discontinuing NRT. Not liking the effects of NRT was more common among quit attempters who were young, poor, or of a minority race other than Latino. Not liking the effects of NRT was associated with approximately 95% lower odds of intending to quit in the next month.

Conclusion: Starting smoking again and not liking the effects of NRT are the most common reasons for discontinuing NRT prematurely. Not liking the effects of NRT may decrease short-term intentions to quit. Interventions to increase compliance should focus on management of NRT side effects to maximize current NRT compliance and future quit intentions.

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CIGARETTE SMOKING AMONG INDIVIDUALS WITH BIPOLAR DISORDER: ASSOCIATION WITH AGES AT ONSET OF ALCOHOL AND MARIJUANA USE

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Background: The prevalence of cigarette smoking among individuals with bipolar disorder is roughly twice that of the general population. Surprisingly, only a few studies have attempted to identify correlates of smoking status in this group, and these studies have focused primarily on the relationship between bipolar or other psychiatric symptomatology and smoking. The role of co-occurring alcohol and other substance use in the association between smoking and bipolar disorder has received minimal attention, and no studies to date have examined the developmental timing of the onset of regular alcohol and marijuana use as predictors of the initiation and persistence of cigarette smoking in this population. In this study, we examined both early and recent alcohol and marijuana use among individuals with bipolar disorder in order to determine relationships with current smoking status.

Method: Demographic and clinical characteristics of 134 patients with bipolar I disorder who were hospitalized for their first manic episode were analyzed to identify correlates of smoking status. Data were collected as part of the University of Cincinnati First-Episode Mania Study.

Results: Forty-six percent of the sample were smokers at the time of their first hospitalization. Smokers were significantly more likely than non-smokers to report recent use of marijuana (56% vs. 18%) and alcohol (67% vs. 25%). Among those who had ever used marijuana (49%) regular alcohol cigarette smokers reported a significantly earlier age-at-onset of regular use of both substances than non-smokers. Whereas an earlier age-at-onset of marijuana use predicted current smoking, age-at-onset of regular smoking did not predict current marijuana or alcohol use.

Conclusions: Smoking status in the early course of bipolar disorder is related to both current and past alcohol and marijuana use. Early initiation of regular marijuana use may increase the risk of starting and/or continuing to smoke cigarettes.

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PREDICTORS OF 30-DAY ABSTINENCE AMONG 16- TO 24-YEAR-OLD SMOKERS—UNITED STATES, 2003

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The majority of adolescent and young adult smokers make a quit attempt each year, yet less than a fifth of these attempts result in successful cessation. While numerous studies have examined factors associated with cessation among adults, there are many reasons to believe that the cessation process may differ among adolescents and young adults. The 2003 baseline wave of the National Health Survey Smoking Cessation Survey (NYSCS) was administered to a nationally-representative sample of U.S. smokers aged 16 to 24 years to learn about their smoking behaviors and cessation experiences (n=2582, RR=62.6%). Multiple logistic regression was used to identify baseline characteristics predictive of 30-day abstinence from cigarettes one year following study survey. Among those who completed the 12-month follow-up survey (n=1688), 13.3% were abstinent for 30 days or longer. Factors predictive of cessation at 12-months in multivariate analyses included smoking fewer cigarettes/day, longer time to first cigarette of the day, not identifying as a smoker, having been abstinent for >7 days in the past, intention to quit, higher self-efficacy, not binge drinking, not enjoying smoking too much to quit, and having at least one parent who didn’t smoke. Enjoying smoking too much was the strongest predictor of not quitting. These findings indicate that smoking cessation in adolescents and young adults aged 16 to 24 years is influenced by multifarious behavioral, psychosocial, and lifestyle factors. Opportunities exist to adapt cessation messages and programs to more effectively target and assist this age group in quitting smoking.

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RPOS3-39
SMOKERS WHO PLAN TO QUIT ARE AS LIKELY TO REDUCE AS STOP
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Prior treatment studies have reported that some smokers who try to quit and fail then return to a reduced level of smoking. However, we know of no studies examining this in a real-world setting among smokers trying to quit on their own. In a 28-day prospective study, 36 smokers who planned to quit abruptly in the next month daily reported their cigarette use for that day and intentions to quit or reduce for the following day. No treatment was provided. About half (56%) of participants intended to quit for at least one day during the study, while 89% intended to reduce for at least one day. Almost half (45%) of participants quit for at least one day during the study, and 67% reduced to at least half their baseline use for at least one day. Across all 1008 smoker-days (36 smokers x 28 days), participants intended to quit on 25% of days and intended to reduce on 54%. They actually quit on 16% of days and reduced on 19% of days. Few of the reduction episodes (13%) led to a quit attempt, and few were relapses to reduced smoking (6%). Most (81%) appeared to be alternatives to quitting. Whether such reductions lead to future quitting among smokers trying to quit is unknown due to the short duration of our study. We conclude reduction is as common a goal and outcome as abstinence among smokers trying to quit. Treatment programs need to institute protocols for dealing with reduction among smokers who initially intend to quit.

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RPOS3-40
THE FEASIBILITY OF A TOBACCO CESSATION PROGRAM IN METHADONE MAINTENANCE CLINICS
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Tobacco use is the leading preventable cause of morbidity and mortality in the U.S., and particular populations, including drug users, continue to have a markedly high prevalence of cigarette smoking. Our objective was to develop and evaluate a comprehensive, multidisciplinary tobacco cessation program, at twelve methadone maintenance clinics in the Bronx, NY, offering co-located primary medical care, mental health services, and multidisciplinary substance abuse treatment. This program includes behavioral and pharmaceutical therapy for interested patients and staff, smoking cessation training for health care providers, and development of institutional non-smoking policies. Trained counselors deliver smoking cessation counseling, focusing on motivational interviewing and cognitive-behavioral skills training. Prescriptions for pharmacotherapy, including nicotine replacement therapy, bupropion, and/or varenicline, are offered. All interested staff is offered smoking cessation services through a semi-structured, six-session group counseling program. All staff physicians and physician assistants received formal, evidence-based training in smoking cessation pharmacotherapy. The tobacco-free workplace policy was disseminated to all staff, and “no smoking” signs were prominently displayed in all 12 clinical sites. To date, eighteen patients have received smoking cessation counseling. The median age of participants was 41 years old, 28% were black and 72% Latino, and 56% were female. The majority (61%) smoked over 10 cigarettes daily. Two-thirds of participants returned for scheduled follow-up counseling visits, and 33% set a quit date. Among staff, six clinic staff members have participated in a smoking cessation counseling group. Twenty-seven staff health providers have participated in training in smoking cessation treatment. The institutional non-smoking policy has been disseminated and implemented. We conclude that patients and staff are responsive to smoking cessation efforts. Multidisciplinary smoking cessation interventions are feasible in methadone maintenance treatment programs despite limited resources.

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RPOS3-41
MODELING THE ABSTINENCE VIOLATION EFFECT DURING SMOKING CESSATION
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Smoking relapse is most often the end point of a process that unfolds over a period of days or weeks, and is characterized by many intermittent lapses. According to Marlatt’s theory, cognitive and emotional responses to lapsing constitute an abstinence violation effect (AVE) that is thought to predispose quitters to further lapses, and drive lapse-relapse progression in an accelerating downward spiral. Yet studies conducted to date have focused exclusively on responses to the first lapse that quitters experience. We used growth curve modeling to investigate the way AVE-related cognitive and affective lapse responses (self-blame, self-efficacy, and negative affect) evolve over the course of the lapse-relapse process. Participants were 189 smokers who achieved abstinence and subsequently lapsed on one or more separate occasions. Using Ecological Momentary Assessment, participants monitored their experiences, including their reactions to each lapse, on palm-top computers. Analyses were restricted to the first 10 or fewer lapses recorded by each participant. Results of growth curve modeling indicate that with each successive lapse, a subsequent lapse occurred 25.9 hours faster (p<.001) and smoking increased by 0.05 cigarettes (p<.05). As the lapse-relapse process progressed, both post-lapse abstinence self-efficacy and negative affect decreased significantly (p<.01). Post-lapse self-blame and guilt remained uniformly elevated across the observed lapses. The variances of the intercept and slope parameters across lapses were significant (p<.05), indicating that responses to the initial lapse differed across individuals, and that individuals followed different lapse response trajectories. These data demonstrate the dynamic nature of lapse responses during smoking cessation.

This research was funded by NIDA grant DA06084. Dr. Shiffman is a co-founder of invivodata, Inc., which provides electronic diary services for clinical research.

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RPOS3-42
RELATIONSHIP BETWEEN CIGARETTE SMOKING AND ILLICIT DRUG USE DISORDERS IN TREATMENT-SEEKING ALCOHOLICS
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Background: Among individuals with alcohol dependence, the prevalence of drug use disorders including nicotine dependence is high. Comorbid abuse or dependence on substances other than alcohol may play a role in the initiation and persistence of cigarette smoking, but previous research on this topic is mixed. We evaluated the relationship between substance use disorder comorbidity and cigarette smoking in an alcohol dependent population by examining the smoking status of treatment-seeking alcoholics in relation to remote and recent illicit drug use.

Method: We administered the Semi-Structured Assessment for the Genetics of Alcoholism (SSAGA) to 158 participants who met DSM-IV criteria for alcohol dependence and were initiating or continuing a treatment program or a clinical trial of pharmacotherapy for the disorder.

Results: The prevalence of lifetime cigarette smoking and illicit drug use disorders in the sample were 78% and 44%, respectively. Individuals who had never smoked regularly were less likely to meet lifetime criteria for illicit drug abuse or dependence and had less severe alcohol dependence. Using a logistic regression analysis to predict current smoking status, we found that older age, more severe alcohol dependence (as indicated by higher scores on the Alcohol Dependence Scale and being in residential vs. outpatient treatment), and use of marijuana in the past year increased the odds of being a current smoker as opposed to a never smoker. Conclusions: Both lifetime and recent illicit drug use are associated with the smoking status of individuals with alcohol dependence. Drug use disorder comorbidities should be taken into account when conducting research with alcohol dependent smokers.

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RPOS3-43 INTegrating smoking cessation treatment within a substance abuse day treatment program: Preliminary findings of a demonstration project

Sharon Cooper, Ph.D., Joseph Chiechi, Ph.D., Regina Gilbert, LPN, Judith L. Cooney, Ph.D.; VA Connecticut Healthcare System and University of Connecticut School of Medicine

Given the high incidence of smoking-related mortality in alcohol abusers, recent VA-wide initiatives have encouraged integrating smoking cessation treatment within substance abuse treatment settings. A demonstration project has explored the impact of integrating smoking cessation education and treatment program within a VA substance abuse day program (SADP) on motivation to quit smoking and rates of voluntary enrollment and participation in smoking cessation treatment. All SADP smokers received an individual tobacco motivational intervention and a 45-minute education group on tobacco health effects and were offered an opportunity to participate in smoking cessation treatment concurrent with SADP or within 90 days following SADP. Measures were readiness for change of smoking behavior (Contemplation Ladder; CL), and CO-confirmed smoking status obtained at beginning and end of SADP; and rates of voluntary enrollment and attendance in smoking cessation treatment during or following SADP. Data has been obtained on 87 individuals. T-tests compared pre and post CL scores. Total group mean scores were significant (p<.001; N=87; M-pre=6.99, SD=2.42; M-post=8.33, SD=2.66) suggesting that SADP participants reported an increased readiness to stop smoking. 45% of smokers voluntarily enrolled in smoking cessation treatment concurrent with SADP. Of those participants receiving concurrent smoking cessation treatment, 45% quit smoking by end of SADP treatment (7 day PP, CO confirmed). Although 46% expressed interest in enrolling in smoking cessation treatment within 90 days following SADP, only 7% attended sequential treatment within 90 days post SADP. Preliminary results suggest that integrating smoking cessation motivation, education, and treatment options into substance abuse treatment is associated with increases in motivation to quit and participation in a smoking cessation program.

Supported by: VA Mental Illness Research, Education and Clinical Center (MIRECC).


RPOS3-44 WEB-ASSISTED TOBACCO INTERVENTION (WATI): LESSONS LEARNED FROM THREE INTERNATIONAL WORKSHOPS

Scott McIntosh*, University of Rochester; Peter Selby, Cameron Norman, University of Toronto; Tim Huerta, Centre for Clinical Epidemiology and Evaluation; Virginia Chow, University of Toronto; Gabrielle Kapsak, University of Rochester

Web-Assisted Tobacco Interventions (WATIs) have now been explored and discussed at 3 international workshops and numerous smaller meetings. Researchers and interventionists from more than 15 countries have participated. Workshop conclusions have suggested that this work continue (i.e., further discussions to develop better practices). WATIs have great potential but may pitfalls. Many challenges lie ahead in research, recruitment, dissemination and evaluation. However, there is a commitment to address these in the coming years. These highly successful workshops demonstrated the international interest in WATI. Much information was exchanged and new collaborations established within this group. A leadership team that can help develop and promote WATI as an essential component of tobacco control emerged. This poster will outline the primary potential applications, anticipated pitfalls, and future directions of this promising e-Health initiative.

These workshops were primarily supported by funding from the National Cancer Institute and Health Canada.

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RPOS3-45 THE COST-EFFECTIVENESS OF THE NOVEL PRESCRIPTION SMOKE THERAPY Varenicline in scOTLAInD


To obtain reimbursement of varenicline in Scotland, Pfizer UK Ltd was invited to submit clinical and cost effectiveness data for this therapy. The economic analysis was conducted using the Benefits of Smoking Cessation on Outcomes (BENESCO) model (adapted from the widely used HECOS model), which simulates morbidity and mortality over time in order to calculate the costs and benefits that accrue from smoking cessation. Varenicline (a 12-week course costing £163.80) was compared with both Nicotine Replacement Therapy (NRT) (Patch was chosen as it is the most commonly prescribed NRT in Scotland; a 10 week course costing £99.70) and bupropion (a 7-week course costing £61.10), over a 20 year time horizon. Efficacy was based on biochemically confirmed quit rates at 1 year taken from pooling the results of the published clinical trials (varenicline 22.5%, NRT 15.5% and bupropion 15.7%). Comparator course durations were selected at the low end of the durations deemed appropriate in the British National Formulary. This modelling approach actively favoured the comparators over varenicline. Results: Compared with both NRT and bupropion, varenicline is more clinically effective as well as being cost saving (dominating). This would lead to savings in direct health care costs in Scotland of £51,020,000 to £166,492,000 over a 20 year time period. Even if NRT was free to the NHS, varenicline would still dominate it. Clinical trial evidence demonstrates that a further twelve weeks of varenicline therapy given to successful quitters improves the one year CO-confirmed quit rate by 6.7% over and above the benefit seen with the single twelve week course. Modeling the benefit of this additional 12-week course given to successful quitters versus standard therapy of one course for all who attempt results in an incremental cost per QALY gained of £245, which is far below the accepted cost-effectiveness thresholds for intervention of £30,000. Based on the cost-effectiveness case outlined above, varenicline has been accepted for use in Scotland.

All authors are employees of Pfizer, the manufacturer of varenicline.

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RPOS3-46 EFFECT OF VARENICLINE AND BUPROPION ON CRAVING, NICOTINE WITHDRAWAL SYMPTOMS, AND REWARDING EFFECTS OF SMOKING DURING A QUIT ATTEMPT

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Varenicline was designed to bind with high affinity to the alpha4beta2 NAc receptor to (1) block nicotine from binding thereby reducing the rewarding effect of cigarettes, and (2) increase activity in neural pathways downstream thus diminishing craving and withdrawal. Published data from the clinical trials support this hypothesis but allow room for doubt about the interpretation because data were averaged over 7 weeks and analyses of craving and withdrawal symptoms used data from both abstinent and non-abstinent smokers, hence subjective effects could have been secondary to effects on abstinence. We analyzed the pooled data from two clinical trials comparing varenicline, bupropion and placebo using ratings of craving, withdrawal, and the rewarding effects of cigarettes smoking. In the first week after the quit date, separating out abstinent and non-abstinent subjects. One week was used as the follow-up point because withdrawal symptoms would be at their most severe during that time and the number of subjects who were abstinent from the quit date would be greatest. Craving was less in subjects receiving varenicline and bupropion than in those receiving placebo in both the abstinent and non-abstinent. Those receiving varenicline reported less craving than those receiving bupropion but the difference was only significant in non-abstinent subjects. Among abstinent subjects, those receiving varenicline and bupropion reported significantly less negative affect than those receiving placebo, but varenicline did not differ from bupropion. Neither medication reduced restlessess, insomnia or appetite in abstainers. Ratings of satisfaction and psychological reward following the first cigarette smoked after the quit date were significantly lower in those receiving varenicline than either bupropion or placebo. The greater efficacy of varenicline compared with bupropion in aiding abstinence seems to be largely due to its effect on reducing nicotine reward. Varenicline’s lack of efficacy in reducing insomnia, restlessess, and increased appetite in this analysis suggests that receptors other than the alpha4beta2 NAc subtype are implicated in these withdrawal symptoms.

The research was funded by Pfizer. Robert West is funded by Cancer Research UK.

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**RPOS3-47** GENETIC VARIATION IN THE DOPAMINE D4 RECEPTOR (DRD4) GENE AND SMOKE CESSATION: FOLLOW-UP OF A RANDOMIZED CLINICAL TRIAL OF TRANSDERMAL NICOTINE PATCH

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Smokers of European ancestry (n = 720) who participated a double-blind, randomized, placebo-controlled trial of transdermal nicotine replacement therapy, were genotyped for two functional polymorphisms (VNTR and C-521T) in the DRD4 gene. Logistic regression models of abstinence at 12-week and 26-week follow-up were carried out for each polymorphism separately. For the DRD4 VNTR models, the main effect of treatment was significant at both 12-week (p=0.001) and 26-week (p=0.006) follow-up, indicating an increased likelihood of successful cessation on active NRT transdermal patch relative to placebo. The main effect of DRD4 VNTR genotype was associated with abstinence at 12-week follow-up (p = 0.034), with possession of one or more copies of the long allele associated with reduced likelihood of cessation (17% vs. 23%), but this effect was not observed at 26-week follow-up. For the DRD4 C-521T models, no main effect or interaction terms involving genotype were retained in the models at either 12-week or 26-week follow-up. These data are consistent with observations from studies of the DRD2 gene that genetic variants related to reduced/decreased dopaminergic tone in the mesocorticolimbic system are associated with increased risk for relapse to smoking following a cessation attempt.

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**RPOS3-48** ASSOCIATION OF COMT VAL108/158MET GENOTYPE WITH SMOKE CESSATION IN A NICOTINE REPLACEMENT THERAPY RANDOMIZED TRIAL

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We investigated the association of COMT genotype with abstinence following a smoking cessation attempt among a large cohort of smokers who attempted to quit using either the nicotine transdermal patch or placebo and were followed-up over an 8-year period following their initial cessation attempt. In addition, we examined the possible modifying influence of sex on any association. The genotype x treatment interaction effect at 12-week follow-up indicated a greater benefit of active nicotine replacement treatment compared to placebo on likelihood of abstinence in the COMT Met/Met genotype group (33% vs. 12%), in comparison to the Met/Val+Val/Val group (22% vs. 16%). Our results indicate that COMT genotype may moderate the effect of active transdermal nicotine patch compared to placebo, with reduced relative benefit of nicotine replacement therapy in individuals with Met/Val or Val/Val genotype. Our data follow an emerging pattern of results suggesting that genetic variation in the dopamine pathway may provide a future basis for tailored smoking cessation therapies, but indicate that different genes influencing various components of this pathway may have different effects on response to smoking cessation pharmacotherapy.

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**RPOS3-49** LESS CRAVING IN ABSTINENT SMOKERS WITH SCHIZOPHRENIA USING NICOTINE NASAL SPRAY COMPARED TO THOSE USING NICOTINE PATCH

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Nicotine nasal spray may be more useful for relieving acute cigarette cravings than other forms of nicotine replacement and may offer an advantage for smokers with schizophrenia. Cue-exposure paradigms offer a method to systematically subjects to drug cues, measure drug craving and test medications' craving-reduction properties. The current study was designed to test if a single dose of nicotine nasal spray (NNS) was more effective than Nicotine Patch (NP): 21mg in reducing cue-induced craving during a 3-day period of abstinence. Twenty-five smokers with schizophrenia or schizoaffective disorder were randomized to open-label NNS or NP after baseline measures of craving were assessed. NNS users were instructed to dose at least 1 spray/hour to a maximum of 40 sprays/day (1 dose=1 spray into each nostril). The average score from a four-item visual analogue scale (need, urge, want to smoke, crave a cigarette) was used to measure self-reported craving. Five subjects who smoked were excluded from the final analysis due to their failure to follow the smoking cessation protocol.

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**RPOS3-50** BUDGETARY IMPACT OF VARECLINE IN SMOKING CESSATION IN THE UK

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The objective of this study was to determine the budgetary impact of varicline in the first five years after its introduction to the smoking cessation aid market in the United Kingdom (UK). The perspective for the present study was from that of the UK National Health Service (NHS) pharmacy budget. We used decision-analytic modeling techniques based on data extracted from a variety of secondary sources including UK national health data, clinical trials, and meta-analyses of smoking cessation aids. The smoking cessation aids examined in this study were prescription nicotine replacement therapies, bupropion, and varicline. The model population was current and former smokers in the UK. The number of patients seeking a smoking cessation aid was estimated from 2004 national health surveys, medication costs from the national prescription drug pricing tariffs, and the clinical efficacy of various drugs were extracted from clinical trials. We conducted both one-way and probabilistic sensitivity analyses to evaluate the robustness of the model results and to test uncertainty around the model parameters. The model results suggest that the addition of varicline in the smoking cessation aid market would result in an additional 256,000 successful smoking cessation attempts over 5 years. Furthermore, the budgetary impact of varicline in the second year after its introduction was estimated to be GBP 3.4 million, or GBP 113.40 per successful quitter. One-way sensitivity analysis showed that the costs of various smoking cessation aids were the major drivers of budgetary impact. Probabilistic sensitivity analysis showed 90 percent likelihood that the budgetary impact of varicline would be below GBP 4.5 million in the second year after its introduction. The results of the present budgetary impact study indicate that the introduction of varicline to the UK smoking cessation aid market would make a relatively small impact on the NHS pharmacy budget. Furthermore, the results also suggest that a greater number of individuals who attempt to stop smoking will be successful.

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SRNT ◆ Rapid Response Abstracts

RPOS3-51 PRELIMINARY EVIDENCE FOR GENDER-SPECIFIC EFFECTS OF TOPIMARATE IN SMOKING CESSATION
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Background: We previously reported that men (38%) treated with topimaramate (up to 200 mg daily) were significantly more likely to quit smoking than women taking the medication (4%; p<0.02). Given the gender differences in topimaramate’s efficacy as a smoking cessation aid, we sought to determine whether the medication’s gender-specific effects extended beyond the primary efficacy endpoint and to begin exploring potential reasons for this gender by treatment interaction effect.

Methods: Forty-nine female and 38 male smokers were randomly assigned to topimaramate or placebo in a double-blind, 11-week treatment trial. Changes in nicotine withdrawal, body weight, urges to smoke, and depressive symptoms were assessed weekly along with safety and tolerability measures.

Results: In addition to exhibiting markedly greater quit rates than female smokers, male smokers reported significantly lower mean nicotine withdrawal scores than both women taking the drug (p<0.04) and men on placebo (p<0.04). Men and women did not differ on changes in body weight, depression or craving. There were no significant gender differences across the topimaramate groups in the mean number or severity of adverse events (AEs), discontinuations due to AEs, or average maximal dosage of topimaramate achieved among participants.

Conclusions: Gender differences in smoking cessation outcome produced by topimaramate extended to tobacco withdrawal, but not to weight change, depressive symptoms, craving or medication tolerability. These provocative preliminary findings warrant further investigation.

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RPOS3-52 QUIT ATTEMPTS AND USE OF SMOKING CESSATION TREATMENTS IN THE U.S.—AN ANALYSIS OF THE 2003 CURRENT POPULATION SURVEY

Smokers are encouraged to attempt quitting and to use effective cessation treatments. We assessed the frequency of quit attempts and use of treatments, using data from 29.537 respondents (18 and older, past-year daily smokers) to the 2003 Tobacco Use Special Cessation Supplement to the Current Population Survey. 43.5% of smokers reported having made a quit attempt in the preceding year; female, Hispanic, more educated, and less dependent smokers were more likely to make quit attempts. Treatment was used in only 35.8% of attempts; 8.8% used behavioral treatment, 32.2% used pharmaceutical treatment; 14.1% used multiple treatments. The strongest moderator of treatment use was nicotine dependence—the most nicotine dependent smokers were more likely to use treatment, particularly pharmaceutical treatment (OR=3.58; CI 3.04-4.20). Such self-selection processes were expected to lead to "confounding by indication," a bias introduced when treatment is selected based on need and risk for failure, often resulting in treatment seemingly being associated with poorer outcomes. Indeed, users of any treatment were less likely to be abstinent >4 weeks at the time of the survey than non-users (OR=0.75; CI 0.67-0.91); this was true for both behavioral (OR=0.68; CI 0.56-0.81) and pharmaceutical (OR=0.76; CI 0.68-0.83) treatment. No treatments were associated with increased abstinence rates, and those who combined both behavioral and pharmacological treatments had the lowest abstinence rates (OR=0.64; CI 0.50-0.83). These results are consistent with confounding by indication; retrospective survey data on self-selected groups should not be used to evaluate treat effectiveness.

The analysis was supported by GlaxoSmithKline Consumer Healthcare (GSKCH), which markets nicotine replacement medications for smoking cessation. All authors serve as consultants to GSKCH on an exclusive basis regarding matters relating to smoking cessation. Dr. Shiffman and Mr. Gitchell also have an interest in a venture to develop a new nicotine replacement medication.

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RPOS3-53 WEARING NICOTINE PATCHES CONTINUOUSLY FOR 3 WEEKS DURING A CESSATION ATTEMPT IMPROVES SHORT-TERM EFFICACY

Studies have shown that the efficacy of ad lib forms of nicotine replacement therapy (e.g., gum and lozenges) improves when users use sufficient quantities of medication. To date, no published study has examined whether nicotine patches users who are compliant with daily patch use receive similar benefits. We examined this question in a secondary analysis of a published real-world nicotine patch efficacy trial (Shiffman et al. Efficacy of over-the-counter nicotine patch. Nicotine Tob Res. 2002 Nov; 4(4):477-83). Subjects were randomized to receive either active (Nicoderm CQ 21-mg; n=204) or placebo (n=167) patches and asked to complete a daily diary, detailing patch use and smoking. Using logistic regression, controlling for smoking in the first 3 weeks of treatment, we assessed the likelihood of abstinence (7-day point prevalence at 6 weeks) as a function of both treatment type (active versus placebo) and treatment compliance (wearing a patch for at least 20 out of the first 21 days of treatment). A total of 253 (Active: n=139; Placebo: n=114) subjects were classified as compliant. Among active patch users, the odds of abstinence almost doubled when subjects were compliant (53.2% versus 21.5%; adjusted OR=1.80, CI=1.14-2.84); compliant placebo patch users, however, received no such benefit (16.7% versus 15.1%; adjusted OR=0.98, CI=0.54-1.78). The influence of compliance in the active treatment group was significantly greater than that seen under placebo (p<0.03). These results support the hypothesis that compliance with nicotine patch dosing instructions in the first 3 weeks of treatment improves the likelihood of achieving smoking abstinence.

The analysis was supported by GlaxoSmithKline Consumer Healthcare (GSKCH), which markets nicotine replacement medications for smoking cessation. All authors serve as consultants to GSKCH on an exclusive basis regarding matters relating to smoking cessation. Dr. Shiffman and Mr. Gitchell also have an interest in a venture to develop a new nicotine replacement medication.

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RPOS3-54 CONTINUING TO WEAR NICOTINE PATCHES AFTER SMOKING LAPSES PROMOTES RECOVERY OF SHORT-TERM ABSTINENCE

Smokers who lapse during a cessation attempt are at particularly high risk of relapse, so interventions to help smokers recover from lapses are urgently needed. Current over-the-counter nicotine patches study results demonstrate that users who lapse during a cessation attempt should continue on treatment. However, to date no study that uses approved doses of nicotine patches have tested this hypothesis. Using data from 509 subjects (240 active; 269 placebo) who lapsed during a randomized, double blind placebo controlled trial of Nicoderm CQ 21-mg nicotine patches (Shiffman et al. Efficacy of over-the-counter nicotine patch. Nicotine Tob Res. 2002 Nov;4(4):477-83.), we examined whether continuing to wear active nicotine patches following a smoking lapse helped subjects to recover smoking abstinence. We examined 7-day point-prevalence abstinence 6 weeks and 10 weeks following the start of the cessation attempt among this sub-sample of smokers who had lapsed during treatment (subjects were allowed a two week grace period at the start of treatment during which instances of smoking were not counted as lapses). Active patch use (versus placebo) increased the probability of recovery from a lapse both at 6 weeks (8.3% versus 0.8%; OR=11.9, p<.001) and at 10 weeks (9.6% versus 2.6%; OR=3.97, p<.001). Thus, the data supports the hypothesis that continuing treatment with active patches may help promote recovery from lapses. As indicated by the current instructions, smokers should be encouraged to persist with patch treatment if they lapse to smoking.

The analysis was supported by GlaxoSmithKline Consumer Healthcare (GSKCH), which markets nicotine replacement medications for smoking cessation. All authors serve as consultants to GSKCH on an exclusive basis regarding matters relating to smoking cessation. Dr. Shiffman and Mr. Gitchell also have an interest in a venture to develop a new nicotine replacement medication.

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RPOS3-55  A VACCINE AGAINST NICOTINE ADDICTION: WHICH SMOKERS WILL TAKE A SHOT AT QUITTING?
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A vaccine against nicotine may soon be available to smokers who want to quit. The vaccine stimulates the production of nicotine antibodies and undermines the pleasurable effects of smoking. The purpose of this study was to evaluate interest in the vaccine among a nationally-representative sample of smokers. Research shows that those who believe there is a genetic link to nicotine addiction may be less likely to attempt to quit smoking because of fatalistic beliefs. A second purpose was to assess whether interest was affected by an effect on interest in the vaccine. Participants were selected from a research panel that is representative of the US population. Participants were randomized to read one of two paragraphs describing the nicotine vaccine. One version framed nicotine addiction as genetically caused while the other framed it as environmentally caused. Participants then indicated their intentions to vaccinate if a vaccine were available in the future. 427 adults completed the study questionnaire (54% male, 85% non-Hispanic white). Participants reported smoking an average of 25 cigarettes per day during the past week and had tried to quit smoking an average of seven times. Fifty-three percent indicated that they would be likely or very likely to try the vaccine. There were no significant differences between framing conditions in intention to vaccinate. The strongest predictors of vaccination intention were being at an advanced stage of wanting to quit (beta=.254), trying multiple methods of cessation in the past (beta=.168), and having a favorable attitude toward vaccination in general (beta=.356). Interest in a nicotine vaccine as a cessation method is relatively favorable among smokers. Beliefs about the root cause of nicotine addiction appear to have little effect on intentions to vaccinate. If the vaccine becomes available, specific groups of smokers may be more interested than others and education and recruitment efforts should be targeted appropriately.

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RPOS3-56  GENDER DIFFERENCES IN SMOKING CESSATION EFFICACY AND COMPLIANCE IN A DOSE-RESPONSE TRIAL OF A TRICYCLIC ANTI-PRESSANT
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We examined cessation in a double-blinded trial of nortriptyline hydrochloride in N=130 smokers, seeking to clarify the role of relief of depression (DEP) and anxiety (ANX) in smoking cessation. We explored the dose-response for the Longest Quit Attempt (LQA:days) and 6-month status. Methods: Dosages 0.25/50/75 mg/day were randomly assigned. For 74 days each subject recorded abstinence, pill counts, other medications, toxicities, and life stresses. The LQA was calculated after the Target Quit Date (TQD-Day 15). Important covariates included baseline age and Fagerstrom Nicotine Dependence (FND). A brief instrument was used to periodically assess DEP and ANX. Genders were compared with t-tests, Chi-squared tests, and correlation analyses. In separate analyses of 61 Males (M) and 69 Females (F), predictors of dropouts and LQA>7 were analyzed with logistic regression, and the censored LQA was analyzed with Cox models, using intent-to-treat (ITT) and several compliance-adjusted approaches. Note: NS/NS means Statistically Significant or Not Statistically Significant (P>0.05).

Results: Gender differences were NS for baseline covariates. FND was highly correlated with several measures of DEP and ANX for F, but not for M. Among dropout categories, there were no NS differences, although there was a trend for withdrawals due to belief the medication was not effective (23.5% F; 8.8% M). There appeared to be a small dose-response in 6-month outcomes, although power was low. The adjusted OR for LQA>7 relative to a 25 mg/day lower dose (ITT analysis) was nearly NS for F (2.13) but not for M (1.01). F, but not M, showed stronger effects and SS when compliance was utilized. Cox proportional hazards showed that the mediated relief of depression was highly positively associated with LQA among F and that high pill-taking compliance, regardless of dose, was the dominant success factor for M.

Conclusions: Promoters and hazards for continued success in a quit attempt were clearly different across genders. Results varied dramatically depending on how compliance was handled, suggesting minimal guidelines are needed to insure comparability across studies. More gender-specific research is needed.

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RPOS3-57  IMPROVING ADHERENCE TO NICOTINE GUM BY SMS TEXT MESSAGING: A PILOT STUDY
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Introduction: Nicotine replacement products, when used properly, double the chance of remaining abstinent after quitting smoking. However, adherence to nicotine gum and other ad lib medications is poor as only a fraction of quitters use these products correctly. Thus, there is a need to develop and refine technology to assist tobacco users to quit properly use medications. This study presents data that examined the feasibility of implementing a web and SMS text messaging program to dose quitters properly and remind them to take medication at regular intervals. Method: A secure web program was created to properly dose cigarette smokers to gum strength (2 vs. 4 mg) and dosing program (9 of pieces/day [PPD]). The program then sends SMS text messaging to the user’s cellular telephone to prompt medication use at regular intervals. We then conducted a randomized trial examining tailored text messaging (TTM) to support text messaging (STM) in 110 cigarette smokers attempting to quit smoking while using nicotine gum. Outcome variables included self-reported seven day recalls of nicotine gum use and cigarette smoking at 7, 28, and 56 days post quit date. The sample was 56% male, 63% White, 43 + 11 years of age, and smoked 19 + 7.6 cigarettes per day (CPD). There were no significant differences between groups at baseline for CPD, gum dosing, and recommended PPD.

Results: On an intent-to-treat basis, independent-sample t-tests revealed that subjects in the TTM treatment were more likely to report chewing more nicotine gum than subjects in the STM condition, (6.5 PPD vs. 4.5 PPD, respectively). No significant differences were found at 4 weeks or 8 weeks, or for cigarette use variables.

Conclusions: Data from this study indicate a combined web and SMS text messaging program is feasible to implement and is associated with short term gains in adherence to nicotine gum use.

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RPOS3-58  PRE-CESSATION TREATMENT WITH NICOTINE PATCH SIGNIFICANTLY INCREASES ABSTINENCE RATES RELATIVE TO CONVENTIONAL TREATMENT
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Previous studies have reported that initiation of nicotine skin patch treatment prior to the target quit-smoking date increases abstinence rates as compared to conventional treatment beginning on the quit date. We hypothesize that smoking in the presence of continuous levels of nicotine attenuates the reinforcing effects of cigarette smoking and leads to a decline in dependence on inhaled nicotine, thereby facilitating cessation. This study involved four groups of smokers (n=100/group) in a 2 (nicotine patch) by 2 (cigarette type) factorial design, in which subjects: 1) received either nicotine patch (21 mg/24 h) or placebo patch treatment for 2 weeks before the quit-smoking date, and 2) smoked their usual brands of cigarettes or switched to low nicotine cigarettes during this period. From the quit date on, all groups received standard nicotine patch treatment, consisting of 6 weeks of 21 mg/24 h, 2 weeks of 14 mg/24 h and 2 weeks of 7 mg/h. Abstinence was defined as strictly no smoking at all from the quit-date on, confirmed by expired air CO. Abstinence was significantly higher in the groups receiving pre-cessation nicotine patch treatment (p<.01), 22% vs. 11%. In addition, the treatment was well tolerated. In view of these findings and similar results from previous studies, current labeling of nicotine patch (and possibly other NRT products), which recommends using NRT only after the quit date, should be re-examined.

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Cigarette smoking in adolescents is a major public health problem that relates not only to the younger population, but also to the long-term physical and mental health of adults. Very little is known, however, about the factors (particularly neurobiological processes) that increase vulnerability for smoking in youngsters. Smoking history and stressful life experiences were assessed in 151 adolescents (56 with current major depressive disorder, 48 with no personal history of psychiatric illness but who were at high risk for developing depression by virtue of parental depression, and 48 with no personal or family history of a psychiatric disorder). Evening salivary cortisol and nocturnal urinary free cortisol also were measured for three consecutive nights in order to assess hypothalamic-pituitary-adrenal (HPA) activity. The subjects then were followed at regular intervals for up to five years to assess smoking history, clinical course of depression and stressful life experiences during the follow-up period. The relationships among HPA activity, psychosocial stress, smoking behavior and depression were examined. Increased HPA activity was associated with smoking during follow-up. Overall, the strongest marker of risk for smoking, in both depressed and non-depressed youth, was smoking, which was associated with increased risk for development/recurrence of depressive symptoms during follow-up, as well as more protracted time to recovery from the symptoms. The effect of smoking on depression was reduced, however, when stressful life experiences and HPA activity were included in the model. Increased HPA activity appears as a vulnerability marker for cigarette smoking in adolescents, with stressful life experiences increasing the risk for smoking in vulnerable youth. Stressful life experiences and HPA activity account, at least partially, for the association between depression and smoking behavior.

RPOS3-59 VULNERABILITY FOR CIGARETTE SMOKING IN ADOLESCENTS: A DIATHESIS-STRESS MODEL
Uma Rao, M.D.*, UT Southwestern Medical Center; Constance Hammern, Ph.D., Edythe D. London, Ph.D., UCLA; and Russell E. Poland, Ph.D., Texas Health Resources

RPOS3-60 CHARACTERISTICS OF ADOLESCENT OCCASIONAL SMOKERS
Alison B. Breland, Ph.D.*1, Carolyn Heckman, Ph.D.*1, Karen Ingersoll, Ph.D.*1, Thomas Eissenberg, Ph.D.*1; *Virginia Commonwealth University; *Fox Chase Cancer Center; 1University of Virginia

RPOS3-61 SMOKING STATUS OF STEP-PARENTS AS A RISK FACTOR FOR SMOKING IN ADOLESCENCE
Jennifer A. Fidler, M.Sc.*, and Robert West, Ph.D., University College London, England

Previous research has mostly found that adolescents are more likely to take up smoking if they have parents who smoke. The question of how far this reflects genetic susceptibility versus social influence is difficult to resolve. The current study seeks to address this question by looking at the role of smoking among non-biological parent figures. Students participating in the HABITS survey, a 5-year longitudinal study of over 5000 11-16 year olds from London, England, reported their smoking status annually. Reports were verified by cotinine and coded as current smoking (smoking sometimes, or more often) and non-current smoking (never smoked, tried just once and used to smoke). Students were asked whether their mothers and fathers smoked, and, if they lived with a stepparent, whether their stepparent smoked. At baseline 15% (650) of the total sample reported living with a stepparent, mostly a stepfather. In this sub-sample, current smoking at any time-point over the 5 years (35.8%, n=232) was less prevalent if neither a parent nor a stepparent smoked (26.9%, n=79) than if just a stepparent smoked (51.2%, n=21), just one parent smoked (38.3%, n=49) or both a stepparent and a parent smoked (46.8%, n=83). Logistic regression analyses adjusting for ethnicity, deprivation and gender confirmed that students living in homes where just their stepparent smoked were significantly more likely to smoke than those who reported having neither parents nor a stepparent who smoked (OR 2.72, p=0.005, 95% CI=1.36-5.47). Those with just a stepparent who smoked were, if anything, slightly more likely to smoke than those who reported that just a parent smoked (OR 1.97, p=0.072, 95% CI=0.94-4.11). Further analyses confirmed that the effect of stepparents on smoking was not explained by the smoking status of absent biological parents, or a greater influence of fathers versus mothers. These results suggest that smoking by a non-biological parent figure is at least as influential as smoking by biological parents, with genetic susceptibility offering no further additive effect.

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RPOS3-62 DECLINING PREVALENCE OF ALCOHOL AND SMOKING ESTIMATES AMONG YOUNG ADULTS NATIONALLY: ARTIFACTS OF SAMPLE UNDER-COVERAGE?
Cristine D. Deline, Ph.D., M.P.H., Daniel Gunderson, M.A.*, Brett T. Hagman, M.A., UMDNJ-School of Public Health

A growing concern for public health surveillance surveys that rely on random-digit-dial sampling is the exclusion of adults in cell phone-only households. The purpose of this study was to examine trends in tobacco and alcohol use estimates generated from the Behavioral Risk Factor Surveillance System (BRFSS) in a sub-population with notable cell phone usage, young adults. BRFSS data from 2001 through 2005 were examined; analyses were limited to participants ages 18-24 and the annual sample contained approximately 18,500 cases. Prevalence estimates were generated with SUDAAN software for three health behaviors: cigarette smoking, binge drinking, and heavy alcohol use. In addition, the authors examined sample completeness for young adults relative to Census estimates. Overall, the prevalence of all three health behaviors among young adults was fairly stable between 2001 and 2003 and then significantly decreased between 2003 and 2005. These trends are not replicated in national surveys that use area probability samples. The authors found a dramatic declining trend in the sample completeness ratio for young adults from 0.66 (2001) to 0.39 (2005). Given high cell-phone-only use among young adults and the worsening sample completeness ratio, the authors suspect the decreases in prevalence are likely artifacts of under-coverage and are not real.

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**RPOS3-64 RECRUITMENT AND RETENTION OF COLLEGE SMOKERS IN A GROUP RANDOMIZED TRIAL**

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Prior investigations have identified difficulty recruiting college student smokers into intervention trials. The current study examines techniques to recruit and retain college students reporting smoking in the past 30 days into a smoking cessation trial, paid to participate despite the cost in changing smoking behaviors or identifying as smokers. The ongoing group randomized trial tests the effectiveness of motivational interviewing to increase smoking cessation with college fraternity and sorority members. Recruitment involved four phases. First, three years before the study’s start, relationships with the Greek community were formed resulting in 100% (8/8) of initially selected chapters participated and were randomized to one of two conditions. Second, screening assessments were successfully administered to 74% (800/1216) of members in the selected chapters. Recruitment efforts for screening included raffles and administering surveys at chapter houses. Third, among the 242 screened chapter members eligible, 81% (197) agreed to participate. Fourth, 76% (149/197) of those eligible who agreed to participate successfully completed initial assessments and were enrolled. Retention data shows 73% (109/149) of participants received at least 3 of the maximum 4 intervention sessions. Recruitment and retention efforts included small cash payments to individuals, food, flexible scheduling, multiple reminders, chapter incentives, and chapter members as study personnel. Bivariate analyses with number of sessions (0-2 vs. 3-4) assessed with gender, age, condition assignment, baseline smoking rate, motivation to quit, Greek chapter or counselor did not predict retention level. Very small levels of association were observed between predictor variables and retention level. The largest association was for baseline smoking rate (r=-.11), suggesting that retention did not differ by any variable considered. These recruitment and retention strategies appear effective and may prove useful to investigators attempting to recruit people who do not identify as smokers and have no interest in quitting. **This study is supported by the following: NIH/NCI grant # R01CA107191-02. PI: Kari J. Harris, Ph.D., M.P.H.**

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**RPOS3-65 ADOLESCENT SALIVA CO TinINE CONCENTRATIONS: RELATIONSHIP TO PLASMA BY GENDER, AGE, AND ETHNICITY**

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Cotinine is the most common biomarker used to assess nicotine exposure and abstinence. It can be tested in various matrices including saliva, plasma, and urine. Saliva offers a less invasive means of assessing nicotine intake, which may be advantageous in adolescents. Previous research on adult populations has shown high correlations between saliva and plasma concentrations. However metabolic variability across gender, ethnicity, and age might impact the relationship between saliva and plasma cotinine concentrations. Our aim was to examine the relationship between saliva and plasma cotinine concentrations across gender, ethnicity (European American vs. African American), and age (younger vs. older) in a sample of adolescent smokers. The sample consisted of 86 adolescent smokers (age 15.1 ± 1.3, 63.8% female, 65.7% European American, 18.2 ± 6.5, FTQ T1 ± 1.3). Saliva and plasma specimens were collected before the treatment phase of a nicotine replacement therapy trial. The relationship between saliva and plasma cotinine concentrations was analyzed using Pearson’s correlation coefficients. Fisher’s transformation was used to convert correlation coefficients. Results showed that the mean correlation coefficient for girls (r=0.90) was significantly higher than for boys (r=0.73), p<0.05. Differences in cotinine concentrations across ethnicity approached significance (p = .06). European Americans showed a trend toward a higher correlation (r=0.90) compared to African Americans (r=0.74). Compared to younger (age 13–15) adolescents, older (>15) adolescents had a significantly higher correlation coefficient (r=0.94 vs. r=0.74, p<0.02). Results did not differ after controlling for cigarettes smoked per day. Future research should seek to further characterize saliva-plasma concentration differences, and determine their underlying mechanisms particularly among adolescents. **Supported by NIDA Intramural Funds.**

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**RPOS3-66 PUBERTAL TIMING, SELF-IMAGE, AND SMOKING ESCALATION AMONG FEMALE ADOLESCENTS**

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Previous research suggests a link between pubertal timing and high-risk behaviors (e.g., Graber, 1997). Less is known, though, about the relationships between pubertal timing, self-perceptions of development, and escalation in tobacco use. This study examined whether girls who matured either early or late would be more likely to initiate and to escalate smoking than girls who matured “on-time.” We also hypothesized that self-perceptions of, and age 11.5, n=65), normal (age 12-13, n=107), or delayed (age 13 and older, n=133). Self-report and timeline follow-back interviews satisfaction with, maturational timing at baseline would be associated with escalation. Participants were 305 8th and 10th grade girls (86% White) participating in a longitudi- nal study of the natural history of smoking. Self-reported age of first menarche was used to classify girls as early (onset at or before assessed smoking through 18 months. Latent growth curve analyses of smoking behavior classified participants into 7 groups. For analyses described here, these were collapsed into 3 groups: nonsmoker/ever tried (n=105), current trier (n=95), and escalators/beyond (n=105). Chi-Square tests indicated that girls who matured early or late were more likely to escalate use beyond experimentation (33.8 and 38.3% vs. 29.9%, p<.05) and to have tried smoking related to girls maturing on-time (70.8 and 72.2% vs. 61.7%; signif- icant at trend level, p<.10). Perceptions about the timing of development relative to others, satisfaction with development, as well as perceptions about looking/feeling like one’s age (or younger, older) were not associated with smoking groups. Participants who were “off-time,” (early or delayed) as determined by age of first menarche, were at much higher risk for ever smoking than participants with normal timing. Results confirmed previous research that early onset of puberty predicts engagement in risk behaviors. We speculate that delayed teens may smoke to help them look “older.” **Supported by NCI grant #R01CA82066 and a grant from the Tobacco Etiology Research Network, funded by RWJF.**

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**RPOS3-67 SMOKING, MENTAL HEALTH AND SUBSTANCE USE PROBLEMS AMONG YOUTH ENTERING OUTPATIENT SUBSTANCE USE TREATMENT**

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Despite increasing awareness of the links between cigarette smoking, substance use, and mental health symptoms in youth populations (e.g., Chang et al., 2005), these associations have yet to be demonstrated among youth clients entering outpatient substance use treatment. In this study, 77 youth clients age 16 to 24 (mean=19.5) provided data on cigarette smoking, psychiatric symptoms, and substance use prior to entering brief group-based substance use treatment. Seventy-nine percent of the sample endorsed smoking (n=81) over the past 90 days, at an average rate of 11 cigarettes (SD=9.47) per day. A comparison of smokers to non-smokers showed smokers to endorse higher levels of general anxiety (t=2.44, p<.01) and phobic anxiety (t=2.01, p<.05) on the Brief Symptom Inventory (BSI). A comparison of 22 heavy smokers, who smoked 10 or more cigarettes per day (mean=16.8 cigarettes, SD=3.46), to less heavy smokers (n=20; mean=4 cigarettes, SD=2.22) showed the former to report a greater number of days of alcohol and/or drug use (mean=23.03, SD=9.34; mean=16.41, SD=9.14 respectively) over the past month (t=2.48, p<.01) and more alcohol-related problems on the self-report version of the Addiction Severity Index (t=2.68, p<.01). Heavy smokers also endorsed greater general anxiety (t=2.05, p<.05) on the Life Problems Inventory, and greater psychiatric distress on the BSI (t=2.27, p<.05). Also increase the odds of alcohol-related problems (t=2.26, p<.05). Smoking status was unrelated to drop-out from treatment (chi square (df=1)=.01). These findings highlight that smoking, and in particular, heavy smoking, may be a marker for heightened severity of clinical and alcohol problems among youth clients entering outpatient substance use treatment. **Canadian Institutes of Health Research (CIHR) Fellowship and CIHR WekerleNet Grant to the presenting author. In addition, Health Canada provided funding for research staff who assisted in the analysis of data for this project.**

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RPOS3-68  YOUTH SMOKING, MENTAL HEALTH, AND OTHER ADDICTIONS: FINDINGS FROM THE CANADIAN COMMUNITY HEALTH SURVEY

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Among adolescents and young adults, smoking may be an important marker for mental health problems and involvement in other potentially addictive behaviors. This research presents findings on measures of smoking, distress, and addiction-risk behaviors among youth age 15-24 (N=8760, mean=19.4), as assessed on the Canadian Community Health Survey (CCHS, Cycle 3.1, 2005). Of the youth who completed the composite mental diagnostic interview (CIDI), 27.9% (N=2458) identified themselves as smokers. Those who identified themselves as daily smokers (N=1601) smoked on average 12.05 cigarettes per day (SD=6.98). Comparisons of smokers to nonsmokers showed that those who smoked reported greater feelings of worthlessness [t=7.3, p<0.01] and sadness over the past month [t=9.0, p<0.01], and more frequently felt that “every day is an effort” [t=8.0, p<0.01] and that “nothing could cheer them up” [t=6.7, p<0.01]. Additionally, smokers endorsed greater symptoms of nervousness [t=5.1, p<0.01], restlessness [t=7.1, p<0.01] and less satisfaction with life [t=13.9, p<0.01]. Of the 6542 youth reporting on suicidal thoughts and attempts, more smokers endorsed lifetime suicidal ideation (18.8% versus 9.5%)[chi square(df=1)=108.43,p<0.01]. Subsets of youth from this sample were also surveyed on alcohol, illicit drug use and gambling. Of the 5938 youth who completed questions on drinking, more of the smokers reported drinking at least weekly (66.3%) than the non-smokers (31.1%)[chi square (df=1)=632.66,p<0.01], and endorsed binge drinking, defined as more than 5 drinks on one occasion (62.6% versus 23.7%)[chi square (df=1)=822.01,p<0.01].

Smokers were also more likely to endorse lifetime illicit drug use (76.1% vs. 28.3%)[chi square(df=1)=106.69,p<0.01], to have used illicit drugs (47.4% versus 16.0%)[chi square(df=1)=680.83,p<0.01] and cannabis over the past 12 months (46.8% vs. 15.8%)[chi square(df=1)=598.60, p<0.01] and to have gambled (77.1 vs. 54.5%)[chi square(df=1)=24.12, p<0.01]. These findings highlight that smoking may be an important marker of distress and addiction-risk behaviors among youth within the community.

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RPOS3-69  PREDICTORS OF SMOKING CESSATION OUTCOME IN COLLEGE STUDENTS

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College student smokers differ in many respects from average adult smokers. A variety of studies have examined predictors of smoking cessation among general adult populations, but to date there is little evidence as to what factors are associated with smoking cessation outcomes in college populations. The present study examined what baseline characteristics of participants predicted successful cessation among college smokers enrolled in the Act Now Tobacco Quit Program at the University of Mississippi. Between August 2004 and September 2006, 182 participants self-selected into the program and completed an intake session, treatment sessions, and several follow-up sessions. Treatment consisted of a series of individual sessions that followed an evidence-based tobacco cessation protocol developed in accordance with CDC and PHS guidelines. A variety of participant variables with theoretical or empirical association with smoking cessation outcomes were analyzed. Outcome data (i.e. successful or unsuccessful) from each participant’s three-month follow-up was the dependent variable across analyses. Success was defined as having neither used tobacco on seven consecutive days, nor two consecutive weekends since quitting. A univariable analysis was conducted for each predictor variable to assess its relationship with outcome. Significant effects were found for participant age, time spent around other smokers, presence of previous quit attempts lasting longer than three months, stress level, and level of depressive symptoms (p<.005). Student status (graduate, undergraduate or nontraditional), marital status, history of treatment for depression, and age of daily smoking initiation were also predictive of outcome (p<.10). These results suggest multiple areas that warrant consideration in the design and implementation of tobacco interventions aimed at college students.

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RPOS3-70  SMOKING DURING PREGNANCY AND POSTPARTUM AMONG TUNISIAN WOMEN

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Background: Cigarette smoking during pregnancy is a significant health risk to the developing fetus. The aim of our study is to assess smoking knowledge, attitudes and practice (KAP) of pregnant and post partum women and to validate self-reported smoking.

Methods: we surveyed 398 pregnant women and recently pregnant, mothers of infants under the age of 2 months, who presented at the Family Planning Clinic in Tunis urban area for either prenatal or newborn care. A medical doctor instigated structured interviews with pregnant women and mothers of newborn infants. Questions included in the smoking KAP and demographic characteristics. The validity of self reported smoking status was established by the dosage of the urinary cotinine.

Results: The smoking prevalence among Tunisian pregnant women or mothers of newborn infants was 4%. The validity of self-reported daily smoking was relatively low. Among women reporting no smoking at the interview 16% misreported active smoking. According to urinary cotinine the smoking prevalence was 18.9%. Knowledge toward the harmful of the active and passive smoking on the health of the pregnant woman and her baby are average. The women attribute essentially to smoking an important role in the emergence of respiratory diseases. The impact of smoking on the progress of pregnancy was evoked by 4 % of the women and only a few women think that smoking during the pregnancy increases the risk of preterm delivery and fetal mortality. Attitudes toward tobacco use smoking are relatively negative. Answers differ little according to the level of studies, the profession and the parity.

Conclusion: Smoking in prenatal and postnatal period is a significant problem among Tunisian women. Smoking cessation programs should focus on this subgroup of women.

Tobacco Research Unit and Office National de la Famillle et de la population.

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RPOS3-71  VALIDITY AND RELIABILITY OF THE WEIGHT CONTROL SCORING SCALE

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The Weight Control Scoring Scale (WCSS) was originally developed to supplement a self-report Reasons for Smoking Scale. Like the other 7 subscales, it includes 3 items (smoke to avoid weight gain; smoke to control appetite; less hungry when smoking). Although widely used, it has not previously been subjected to psychometric analysis. To fill this gap, we assembled a database of 1,512 daily smokers (53% female, 47% White) who completed this scale as part of our baseline battery. To create a pseudo-random sample, we excluded all participants recruited to participate in studies focused on weight issues. Mean age was 35.27 [11.97 SD] years, mean FTND 4.90 [2.36 SD], and mean smoking rate 20.71 [9.75 SD] cigarettes/day. WCSS score correlated significantly with Body Satisfaction (r=-.244, p<.001), Dieting and Bingeing Severity Scale (r=-.352, p<.001), [lack of] self-efficacy about relapse if post-cessation weight gain occurred (r=-.561, p<.001), endorsement of increased appetite/weight gain as a withdrawal symptom (r=-.533, p<.001), and all 3 subscales of the Three Factor Eating Questionnaire (Cognitive Restraint, r=.348, p<.001; Disinhibition (r=.267, p<.001; Hunger, r=.128, p<.01), Cronbach’s alpha was .834. In a subsample of 71 smokers who completed the questionnaire twice, calculations of test-retest reliability, controlling for time between administrations, produced significant strong correlations for all items and for the scale as a whole (r=.705, p<.01). Female participants scored significantly higher than males (3.19 [.09 SEM] vs. 1.87 [.08 SEM], p<.001). When only Black and White smokers were included and race was added to the model, race was not significant per se, but an interaction emerged such that White men scored slightly lower than Black men, whereas White women scored higher than any other category. Our results suggest that the WCSS is a reliable and valid instrument that lends itself to use as a screening tool. Because of pronounced sex differences, we recommend that men scoring at least 3 and women scoring at least 5 (putting them in the top 30% for their sex) be classified as weight control smokers.

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RPOS3-72 INCREASED LEPTIN AND DECREASED GHRELIN LEVEL AFTER SMOKING CESSION

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Smoking cessation is associated with transient increases in body weight. Leptin and ghrelin are known to be major mediators of appetite, weight and the reward pathway. Therefore, this study assessed the changes in the plasma leptin and ghrelin level and their relationship with the body weight and appetite after smoking cessation in the Korean population. Eighteen subjects, who had stopped smoking for 2 months were enrolled in this study. The body mass index (BMI), body fat mass (BFM), waist:hip ratio (WHR), weight and appetite were measured before and after smoking cessation. In addition, the plasma leptin and ghrelin levels were measured. The plasma leptin concentration increased and the plasma ghrelin level decreased after smoking cessation. The change in the leptin level was positively correlated with the change in the body mass index and body fat mass. These results do not support the direct mediation of the leptin/ghrelin/neuropeptide Y (NPY) system on weight gain after smoking cessation. It appears that weight and appetite is regulated by a more complicated mechanism after smoking cessation.

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RPOS3-73 FACTORS ASSOCIATED WITH SMOKING CESSATION IN A SAMPLE OF PREGNANT, LOW-INCOME WOMEN

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Predictors of smoking cessation were investigated in a sample of pregnant, low income/indigent women receiving obstetrical care from a hospital-based clinic. A total of 68 women with a history of smoking were recruited in their third trimester: 21 had quit (expired CO <10ppm); 47 were continuing smokers. The sample had a mean age of 25 yrs, 38% had no high school diploma or GED, 88% had total household income <$25,000.00, 52% were white and 43% were black, 24% were married. Quitters and Smokers did not differ in any of these dimensions. Current negative affect and stress levels were not associated with smoking status. Both of clinical depression was marginally related to continued smoking (p<.06). Knowledge of the personal health effects of smoking was not related to cessation. Both Quitters and Smokers could discriminate smoking-related diseases from those not associated with smoking and produced comparable estimates of the role of smoking in the development of adult disease states. However, while both Smokers and Quitters showed equal knowledge about possible effects of smoking on fetal development, Quitters were more likely to see such effects as highly related to smoking, which led to increased cessation (OR=54, p<.03). Finally, the decision to breast feed predicted cessation (OR .56, p<.03). These findings suggest that women are highly concerned about their baby’s health and highlighting the strength of the relationship between smoking and fetal risk, rather than reviewing personal health risks, may optimize cessation. Several environmental/social factors did not predict smoking status: number of children, parental smoking and sibling smoking were unrelated to smoking status. However, number of smokers living in the household (OR 40, p=.001), percentage of friends who smoke (OR 1.02, p<.02) and the baby’s father being a smoker (OR 8.4, p=.001) all predicted continued smoking. These results underscore the necessity of developing cessation interventions that extend beyond the individual smoker and into their social environment. Programs that facilitate cessation by partners and other household members may be particularly useful.

This study was conducted through Xavier University and was supported by a departmental grant — The Project Chair Award in Mentoring and Scholarship — awarded to both authors.

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RPOS3-74 UNDERSTANDING THE RELATIONSHIP BETWEEN DEPRESSION AND SMOKING AMONG WOMEN SMOKERS: DOES HISTORY OF WEIGHT CYCLING CONtribute?

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The relationship between smoking and depression is well documented, but the mechanism underlying this association is not clear. Depression is also associated with weight cycling, but this relationship has not yet been explored as a possible contributor to the relationship between smoking and depression. Using data from a web-based survey, we analyzed data from 233 college women (Mean age=21.6 years; 68.4 percent Caucasian; 48 current smokers vs. 185 never smokers; 176 non-weight cyclers vs. 57 weight cyclers) to examine the relationship between smoking status, depression, and weight cycling (defined as losing and regaining 20 pounds or more at least once). Depression was assessed with the Patient Health Questionnaire (PHQ-9), on which scores can range from 0 to 27. Smoking status was significantly related to weight cycling and depression, but not binge eating. A 2 (smoking status) X 2 (weight cycling status) ANOVA yielded significant main effects for both smoking status (p<.01) and weight cycling (p<.01) with the interaction approaching significance (p=.058). Relative to never smokers, smokers were significantly more depressed (PHQ-9 M=16.6, SD=6.8 for smokers vs. M=14.4, SD=4.8 for never smokers), and they were more likely to have a weight cycling history (37.5 percent of smokers vs. 21.1 percent of never-smokers, Chi-square=5.6, p<.05). Because body mass index (BMI) was a significant covariate, we conducted a 2 (weight cycling status) X 2 (BMI less than 25 vs. BMI greater than or equal to 25) ANOVA of smokers only. Results yielded a significant main effect for weight cycling but not BMI. Interestingly, in this analysis, those with the highest depression scores were the normal/underweight (BMI<25) weight cyclers (PHQ-9 M=20.83, SD=7.33). Results suggest that weight cycling may differentially contribute to the relationship between smoking and depression among non-overweight women. Future research should explore whether comparable cessation-related weight gain by non-overweight versus overweight women may yield greater depression among non-overweight women and thereby influence the outcome of cessation efforts.

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RPOS3-75 DEPRESSION AND TRAUMA IN PREGNANT WOMEN SEEKING SMOKING CESSATION TREATMENT

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Smoking during pregnancy increases the risk of infant mortality and morbidity. Although psychiatric co-morbidity may be an important contributing factor to the timing and success of cessation efforts during pregnancy, the relationship between smoking and psychiatric disorders in pregnant women has received little attention. This study investigated the proportion of DSM-IV mood disorders, the proportion of posttraumatic stress disorder, and incidence of trauma in a sample of pregnant smokers participating in an intensive smoking cessation intervention trial. The average age of participants was 25 years. Sixty-one percent of the sample was African-American and 71% had an educational level of high school degree or less. The majority of women were unemployed (84%). The mean number of cigarettes smoked during the past 7 days was 10.4 and the mean FTND score was 3.4. Seventy-eight percent of women met SCID criteria for lifetime major depressive disorder and 5% met criteria for lifetime bipolar disorder. Thirty-nine percent of women entered the trial in a current major depressive episode, with 27% meeting full criteria and 13% in partial remission. Ninety-six percent met DSM-IV criteria for current nicotine dependence. Posttraumatic stress disorder was assessed with the PTSD Symptom Scale Report, a self-report instrument based on DSM-IV criteria. Twenty-eight percent of women met criteria for PTSD. High levels of moderate to severe childhood abuse were reported on the Childhood Trauma Questionnaire. Sixty-one percent of the sample endorsed moderate levels of emotional, physical, or sexual abuse or neglect during childhood and 47% endorsed severe levels of neglect or abuse. In addition, pregnant smokers reported high levels of ongoing traumatic events and stressors (e.g., incarceration history 20%, incarceration of partner 23%, domestic violence 32%, homelessness 11%). Results suggest that psychiatric comorbidity and trauma may be important factors to consider in the treatment of pregnant smokers and should be assessed in future trials.

National Institute on Drug Abuse.

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SEEKING SMOKING CESSATION TREATMENT

DEPRESSION AND SMOKING AMONG WOMEN SMOKERS: DOES HISTORY OF WEIGHT CYCLING CONTRIBUTE?

UNDERSTANDING THE RELATIONSHIP BETWEEN DEPRESSION AND SMOKING AMONG WOMEN SMOKERS: DOES HISTORY OF WEIGHT CYCLING CONTRIBUTE?

DEPRESSION AND SMOKING AMONG WOMEN SMOKERS: DOES HISTORY OF WEIGHT CYCLING CONTRIBUTE?

UNDERSTANDING THE RELATIONSHIP BETWEEN DEPRESSION AND SMOKING AMONG WOMEN SMOKERS: DOES HISTORY OF WEIGHT CYCLING CONTRIBUTE?
GENDER AND DEPRESSIVE SYMPTOMS CORRELATES OF GROWTH IN AMERICAN ADOLESCENT CIGARETTE USE

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It is well documented that tobacco use problems are a critical issue among American Indian youths. Fewer studies have examined developmental progression in adolescent cigarette use and the predictors of the progression. This study examines using a 3-year longitudinal study how gender and depression predict the developmental trajectories of adolescent cigarette use. A sample of 743 tribally enrolled youths (370 males and 373 females), aged 10-13 years, living in upper Midwest reservations and Canadian First Nation reserves was interviewed in person as a baseline through 2002 and 2003. Seven hundred one and 684 youths from the initial participants were respectively interviewed at the second and third follow-up years. We measured the extent of cigarette use (once to daily) in the past 12 months and depressive symptoms using the Center for Epidemiologic Studies Depression Rating Scale. Growth curve modeling was used to examine developmental trajectories of adolescent cigarette use, and examine the effects of gender and depressive symptoms on the trajectories. The differences in the trajectories of cigarette use were tested with the framework of the multifid level model for change using SAS PROC MIXED (Singer & Willett, 2003). The results revealed that time was significantly related to growth in adolescent cigarette use in unconditional growth model (AIC=5797). Female gender, time, and depressive symptoms were associated with the growth in cigarette use over time. The results show that depressive symptoms, time, and gender X time interaction were also significantly associated with growth (AIC=5745). All predictors remained significant in the final model for testing their simultaneous effects (AIC=5631). Thus, the impact of depressive symptoms on growth in cigarette use is not being in paid work, slightly lower consumption of cigarettes, higher social acceptability of smoking, and positive attitudes toward tobacco regulation. Among RYO users, exclusive use of RYO cigarettes (compared with Mixed use) was associated with older age, female gender (relatively), thinking about the enjoyment of smoking, and not making a special effort to buy cheaper cigarettes if price increases. Finally, exclusive RYO smokers are less aware of health warnings (there are no health warnings on RYO tobacco in Thailand and Malaysia), but despite this, knowledge of the health effects of tobacco is equivalent. RYO smokers from the two SEA countries are substantially different from those in the four developed countries studied. In some ways, they are more like the exclusive RYO users in the West, in that they are older, poorer and less educated (i.e. stereotypical old, poor, uneducated RYO smoker), but with a stronger tendency to come from rural areas. In addition, there is really nothing in the Western world to compare with the older women who smoke RYO exclusively, especially in Thailand. The finding of equivalent knowledge of health harms among RYO smokers shows that the lack of health warnings has not disempowered this group. They are clearly getting the information from other sources, including other smokers' cigarette packs.

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RPOS3-81 CHARACTERISTICS ASSOCIATED WITH PERCEIVED RISK OF SMOKING IN AN OLDER MEDICALLY ILL POPULATION

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Perceived risk of smoking is associated with greater intentions to quit in healthy smokers. Few, if any studies, have assessed risk perception in older medically ill smokers using multiple measures of risk. The aims of our cross-sectional study were to (1) assess the relationship between several measures of perceived risk and demographic, smoking history, and psychosocial variables among these smokers, and (2) examine the association between risk perception and motivation to quit. Participants (n=237, M age=56, 54% female, 81.4% white, 39.2% <12 yrs education, M=21cgis/day) were receiving home care for either an acute or chronic illness and were part of a clinical trial involving nurse-delivered smoking cessation counseling. We assessed risk perception at baseline (prior to counseling) by measuring perceived vulnerability to the health effects of smoking, optimistic bias (belief that personal risk is less than that faced by others), and precaution effectiveness (the belief that quitting smoking will reduce risk). Multiple regression analyses showed that greater perceived vulnerability was associated with greater smoking urges, higher motivation to quit, lower confidence in quitting, and lower levels of social support, and lower quality of life (SF-12 physical and mental)(all p's <0.05). Greater optimistic bias was associated with employment, older age, non-white race, less education, lower smoking rate, greater confidence to quit, less stress, and higher quality of life (all p's <0.05). Greater precaution effectiveness was associated with employment, lower smoking rate, greater “cons” of quitting and higher motivation to quit (all p's <0.05). Greater perceived vulnerability and precaution effectiveness, but not optimistic bias, was associated with higher motivation to quit and with latter stages of behavior change (i.e. preparation stage). These findings could be informative in guiding the development of effective smoking cessation programs for this population.

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RPOS3-82 ASSESSMENT OF SMOKING HABITS AND PREVENTION OF CIGARETTE SMOKING IN HIGH SCHOOL STUDENTS—RESULTS FROM A GERMAN HOSPITAL-BASED EDUCATIONAL LESSON

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Effective prevention strategies are needed to reduce smoking in adolescents. We investigated the effectiveness of a hospital-based educational lesson on smoking habits in German high school students. The 2.5-hour lesson focused on a typical patient history, epidemiology, physiology of the lung, contents of cigarette smoke, health problems and a demonstration of the subliminal impact of tobacco commercials. Further we discussed symptoms, diagnostic and therapeutic procedures in lung cancer and offered the students to talk to a patient with tobacco-associated pulmonary disease about past or present smoking habits and consequences on the patients health. 212 students (29% smokers (SM), 71% non-smokers (n-SM)) at the age of 13 to 21 participated in the study and were questioned before and 1-2 weeks after the lesson. 60% claimed that the influence of friends was the main factor for smoking (all p's <0.05). Greater perceived vulnerability and precaution effectiveness, but not optimistic bias, was associated with higher motivation to quit and with latter stages of behavior change (i.e. preparation stage). These findings could be informative in guiding the development of effective smoking cessation programs for this population.

Funded by Tobacco Dependence Treatment Centres Project and IGA NR 9055.

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RPOS3-83 TOBACCO DEPENDENCE TREATMENT IN THE CZECH HEALTH CARE SYSTEM, ANALYSIS OF 1027 PATIENTS

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Background: Smoking prevalence in the Czech Republic (10,000,000 inhabitants) is 26% in the adult population. Between 1996-2006, about 40 smoking cessation clinics worked, but mostly not in the frame of the healthcare system (consultancy basis). In 2004, first Tobacco Dependence Treatment Center was established as the first one of 11 centers working across the country now. Since 2006, their work is partly covered by the health care insurance system.

Treatment available: (1) First line doctors, clinicians — mostly just advise to stop smoking without practical help; (2) Eleven tobacco dependence treatment centers with intensive psychosocial and medical support based on Mayo Nicotine Dependence Center delivering psychosocial treatment — on average 50% filled. (3) Prescription only: bupropion (i.e. preparation stage). (4) Tobacco dependence treatment facilities delivering psychobehavioural support + pharmacotherapy — not reimbursed: NRT — patch, gum, inhaler, microtabs, lozenge (OTC, pharmacy only), bupropion (prescription only), varenicline expected during Spring 2007. (5) Smoking cessation helplines: 9000 000 000, 808 080 080, 808 080 080 808, 808 080 808 808.

In 2005-2006 we answered 2,582 calls (107.6 monthly). Almost all callers were nicotine dependent (3% had their first cigarette later than one hour after waking up).

Results: 1,027 patients (527 male, 500 female) from our Center: Age: 2.8% (291/1,027) between 14-24 years, 45.5% (467/1,027) between 25-50 years and 51.7% were older than 50 years. Nicotine dependence level: mean FTND score was 5.69. Only 2.2% (22/997) were not nicotine dependent (FTND=0). The average number of visits in our center was 3.9 (including 24% of patients, who came just for prescription and did not start the treatment). Pharmacological treatment: 13.6% (115/844) bupropion, 56.8% (479/844) nicotine patches, 38.4% (324/844) nicotine gum, 42.4% (358/844) inhaler and 16.4% (138/844) nicotine microtabs. Combination was possible. One year continuous abstinence validated by CO in those having the D-Day in 2005 was 25.9% (72/278).

Conclusion: Example of analysis shows typical results in nicotine dependence as well as success rate. Treatment of tobacco dependence should be more broadly available to Czech smokers.

Funded by Tobacco Dependence Treatment Centres Project and IGA NR 9055.

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RPOS3-84 SECONDHAND SMOKE EXPOSURE LEVELS IN YOUTH VENUES IN THAILAND AND MALAYSIA

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Purpose: To collect exposure data from bars, nightclubs, and discos frequented by young people to determine if secondhand smoke exposure levels in these locations in Thailand and Malaysia are higher than the occupational health threat to workers or patrons.

Method: Secondhand smoke exposure was measured in a total of 150 youth venues in four cities in Thailand and Malaysia mostly between July and September 2007 using a portable air measurement device that measures particulate matter with a diameter of 2.5 microns or less (PM 2.5). The US EPA has set a limit of 15 micrograms per cubic meter as the average annual level of PM 2.5 exposure and 35 micrograms per cubic meter as the twenty-four hour exposure limit.

Results: Levels of PM 2.5 indoor air pollution ranged from 29 to 2,178 micrograms per cubic meter in Thailand and 26 to 3,825 micrograms per cubic meter in Malaysia. In Thailand, the mean level was 661 micrograms per cubic meter and in Malaysia, 537 micrograms per cubic meter. In contrast, smoke-free locales in Thailand and Malaysia had 2007 geometric mean levels of 27 and 28 micrograms per cubic meter. All youth venue exposure measurements exceeded the average annual standard and only 12% of the 150 measures were less than 3 times the twenty-four hour EPA standard set for ambient air.

Conclusions: (1) Secondhand smoke exposure levels in youth venues in Thailand and Malaysia are significantly higher than in other venues that allow smoking based on a previous study of exposure levels in these countries, and (2) the mean exposure level was more than 35 times the average annual exposure limit set by the US EPA and more than 15 times the US EPA standard for twenty-four hour exposure. These levels present hazards from both short-term exposures for individuals with health conditions (asthma or heart conditions) and from long-term exposure for service workers like wait staff, bartenders, DJs and musicians who work in these establishments daily. Appropriate remedial action should be taken to address these very dangerous occupational air contaminant levels in Thai and Malaysian youth venues.

This research was funded from the US National Cancer Institute (I) (from the Roswell Park Transdisciplinary Tobacco Use Center (TTRUC), P50CA111236, and the Flight Attendant Medical Research Foundation (FAMRI)).

RPOS3-85  CIGARETTE SMOKING AMONG OLDER MEN AND WOMEN WITH OR AT-RISK FOR HIV INFECTION

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Though cigarette smoking has declined in the general U.S. population, it continues to be highly prevalent in certain high-risk populations, including persons with or at risk for HIV infection due to high risk sexual or drug using behaviors. Despite advances in HIV prevention and treatment, persons with or at risk for HIV infection are therefore at risk for tobacco related diseases and early mortality. To understand smoking behavior in this population, we investigated the prevalence of and factors associated with cigarette smoking in 643 men and 620 women (N=1263) with or at risk for HIV. Fifty-six percent were HIV-positive and the remainder had a history of sexual or drug using HIV risk behavior. The mean age of study participants was 50 years (SD=7.0; range 35-80), and the majority was Black or Hispanic (82%). Over 90% reported ever smoking cigarettes, and 74% currently smoked cigarettes. The mean age at which participants began smoking was 15.6 years (SD=5.1; range 6-60); current smokers smoked a mean of 11.4 cigarettes per day (SD=8.0; range 1-60). Bivariate analyses revealed that depression and illicit drug use during the previous six months were significantly associated with current cigarette smoking, while better self-reported overall health, greater life satisfaction, and HIV-infection were associated with not smoking. All of the variables significantly associated with current cigarette smoking in bivariate analyses, except better overall health, remained significant in a multivariate model. These findings suggest that cigarette smoking is highly prevalent among older men and women with or at-risk for HIV, and that smoking cessation interventions should be targeted for this population. Specifically, older individuals who have recently used illicit drugs or are currently depressed are in need of smoking cessation interventions that are adapted to their needs.

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RPOS3-87  CULTURAL IDENTIFICATION AND SMOKING AMONG URBAN AMERICAN INDIANS

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Among American Indian people, an important relationship has been theorized between cultural identification and substance use, including the use of tobacco. Although researchers have documented a negative relationship between strong American Indian cultural identification and drinking, to date, no empirical research has investigated the relationship between cultural identification and tobacco use among American Indian adults. Using the Orthogonal Cultural Identification Scale (OCIS), we examined the relationship between American Indian and White cultural identification and cigarette use in a sample of American Indian people recruited at an urban Indian center (n=217). OCIS item analysis revealed that individuals who endorsed a high frequency of engagement in special activities or traditions based on American Indian culture were more likely to smoke (Somers' d=2.108, p=.035). We did not find a relationship between high overall American Indian (AI) identification and smoker status (defined as cigarette use in the past seven days). Also, orthogonal cultural identification (categorized as high White/high AI, high White/low AI, or low White/high AI) was not related to smoker status. These findings are not consistent with alcohol research showing a general inverse relationship between overall American Indian cultural identification and drinking. Our data suggest that, among urban American Indians, some aspects of cultural identification (such as participation in traditional activities) may be related to smoking status, while other aspects of identification may be unrelated to smoking.

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RPOS3-88  THE IMPORTANCE OF ROLE MODELING GOALS IN THE QUIT INTENTIONS OF SMOKING PARENTS ACROSS FOUR COUNTRIES: FINDINGS FROM THE INTERNATIONAL TOBACCO CONTROL (ITC) FOUR COUNTRY SURVEY

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It is important to understand the factors that lead parents who smoke to quit smoking, as children of smokers are more likely to become smokers themselves, and are often exposed to environmental tobacco smoke in the home. The importance that parents assign to being a non-smoking model for their children in thinking about quitting and the age of the youngest child in their home was examined on subsequent intentions to quit in a sample of 1,304 adult daily smokers from the 2003 and 2004 subsequent intentions to quit. This pattern of results did not differ significantly by country. These findings highlight the importance of the presence of young children and of smokers’ parenting goals in the quitting process and support quit smoking campaigns that focus on the impact of parents’ smoking on their children.

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RPOS3-89  PREDICTORS OF KOREAN-AMERICAN MEN’S BEHAVIORAL INTENTIONS TO QUIT SMOKING AND ACTUAL QUIT ATTEMPT(S)

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The aim of the present study was to examine the predictive power of theoretical variables (habit, physiological state of arousal, attitudes, perceived social norms, self-efficacy, and behavioral intentions) along with personal variables on quit attempts made by Korean male immigrants residing in the United States. The theoretical variables were identified from the theory of planned behavior and the theory of interpersonal behavior. At baseline, Korean men were recruited into the study and of these, 93 participated in a one-month follow-up test. Multiple regression analysis and binary logistic regression analysis were performed to identify predictors of behavioral intentions, quitting nicotine and actual quitting behavior at follow-up, respectively. Past-year quit attempts and habit (average number of cigarettes smoked per day) explained 19% of the variance in behavioral intentions to quit smoking (p<.0001). Attitudes and perceived family social norms explained the explanatory power by 18% (p=0.0001) with an overall 37% of the explained variance in behavioral intentions. Religion (being Christian) and perceived family norms of smoking had about 32% of predictive power over actual quitting behavior that was defined as abstaining for at least 24 hours. Self-efficacy at follow-up predicted the behavior with an odds ratio = 0.957 (95% CI: 0.895-0.966, p<.0001) as did number of cigarettes smoked at baseline with an odds ratio = 0.927 (95% CI: 0.850-1.011, p=0.086). These findings suggest that any smoking cessation program planned for Korean male immigrants consider incorporating perceived family social norms in treatment.

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RPOS3-90  KNOWLEDGE, ATTITUDES AND PRACTICE (KAP) ON SMOKING CESSATION AMONG HEALTH CARE PROFESSIONALS IN GUANGZHOU, CHINA

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Background and Aim: China has the largest smoking population in the world, but little is known about Chinese healthcare professionals’ knowledge, attitudes, and practice (KAP) on smoking cessation. This study is the first phase of a larger project of establishing smoking cessation clinics in China, and was aimed to explore the KAP among doctors and nurses in Guangzhou, China.

Method: A cross-sectional survey was conducted on 5147 doctors and nurses with immediate patient contact in 11 hospitals under the Guangzhou Health Bureau System. Descriptive and analytical statistical analysis such as frequencies and chi-square tests were used to assess the KAP score and smoking prevalence of health care professionals.

Results: 2584 (757 doctors and 1294 nurses) respondents (50.2%) completed a self-administered questionnaire with 23.7% male and 76.3% female. 85.7% were non-smokers (49.0% in men, 97.5% in women). Among the 353 smokers and ex-smokers, 73.1% never smoked in front of patients. When exposed to second-hand smoking, 42% of participants moved away and 21% of participants did nothing, only 11% of participants asked smokers to quit. The mean number of correct answers on general knowledge (out of 8) is 4.59 +/- 1.39 for doctors and 4.16 +/- 1.23 for nurses (p <.001); and for specific knowledge (out of 18) is 12.37 +/- 3.10 for doctors and 11.46 +/- 3.13 for nurses (p<0.001). Doctors (mean score = 2.97 +/- 0.43 on a 4-point scale) had a more positive attitude towards tobacco control than nurses (mean score = 2.91 +/- 0.40; p<0.001), however, nurses had a higher level of engagement in smoking cessation activities in all five phases (ask, advise, assist, arrange, follow-up) of Health Care Policy and Research (AHCPR) framework (mean score of nurses = 2.13 +/- 0.73, vs. 1.96 +/- 0.69 in doctors on a 4-point scale; p<0.001). Both doctors and nurses had practiced more in ‘advice’ than the other four steps.

Conclusion: Health care professionals in Guangzhou and possibly other parts of China have inadequate KAP on smoking cessation. Capacity building for public health advocacy for tobacco control and smoking cessation is urgently needed.

Funding source: Cancer Research United Kingdom.

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RPOS3-91  TOBACCO CESSATION ACTIVITIES BY DENTAL STUDENTS: A SURVEY OF THREE-YEAR-DENTAL STUDENT KNOWLEDGE ATTITUDES AND BEHAVIORS

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A survey was utilized to assess the tobacco cessation knowledge, attitudes, and behaviors of third year dental students participating in a tobacco cessation program at a dental school in New York State. Tobacco cessation education in New York State is a mandatory component of continuing education. Tobacco cessation education is provided to dental students via a didactic course and practicum provided at the beginning of the third year. The survey was administered via an audience response system two months after the completion of the course. Dental students overestimate the number of US adults who smoke, however they correctly identified the prevalence of smokeless tobacco use by US adults. Only 36% correctly identified White Americans as the racial group with the highest tobacco use. Students’ knowledge of the systemic and oral effects of tobacco use is high (90% correctly identify the systemic and oral effects of tobacco use). Self-efficacy for dental students was low, with 56% indicating that they were not confident in their ability to help a patient stop using tobacco. Knowledge about tobacco cessation was rated as very good or excellent by only 31% of the dental students. The importance of tobacco prevention programs in dental offices is remarkably high with 79% responding that tobacco cessation was a very important component of tobacco cessation. Substantial confusion exists on the activities associated with the USPHS Five A’s. Dental students identified nicotine patch (58%) as the optimal pharmacotherapy to recommend for use by dental patients, this was followed by Buproprion (23%), 18% of the surveyed dental students reported current smoking activity. The survey reveals that dental students accept tobacco cessation as a component of dental activities. Although knowledge of the effect of tobacco use is high, knowledge on how to conduct tobacco cessation activities was low. Subsequent to the survey dental students receive an additional lecture to reinforce previous materials provided. The didactic program requires enhancement via clinical experience to improve perceived self-efficacy scores.

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RPOS3-92  QUITLINES VS. THE 5A’S IN PRIVATE PRACTICE DENTAL OFFICES: PRELIMINARY RESULTS


Introduction: The primary aim of this study is 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. One intervention consisted of a combination of dental practitioner advice to quit and proactive telephone counseling (3A’s Condition), and the other arm consisted of a dental practitioner-delivered intervention based on the 5A’s of the Clinical Practice Guidelines (5A’s Condition). This poster presents the preliminary 3-month outcome for patient tobacco cessation.

Methods: We recruited, randomized, trained and collected data in 68 private practice dental practices located throughout the State of Mississippi. A total of 2177 tobacco-using patients were enrolled in the study over a 3-year period. To-date, we have collected 3-month outcome data from 1644 eligible participants.

Results: Preliminary analysis of the 3-month data indicates that overall, patients in the 5A’s Condition quit at higher rates than those in Usual Care or the 3A’s. However, these differences are not statistically significant. For those patients receiving telephone counseling from the Quitline, self-reported abstinence was 10.5%. These results suggest that the Quitline can be more effective than the brief counseling provided by dental practitioners. However, only a small percentage of patients referred to the Quitline actually received any cessation services.

Discussion: Within a dental setting, there may be a high demand characteristic for patients who use tobacco. One intervention consisted of a combination of dental practitioner advice to quit and proactive telephone counseling (3A’s Condition), and the other arm consisted of a dental practitioner-delivered intervention based on the 5A’s of the Clinical Practice Guidelines (5A’s Condition). This poster presents the preliminary 3-month outcome for patient tobacco cessation.

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Discussion: Within a dental setting, there may be a high demand characteristic for patients. They may readily agree to proactive referral, but really do not want to receive counseling. Therefore, most of these patients receive no assistance in quitting. Our results suggest that dental professionals would be most effective in helping their patients to quit by regularly providing the 5A’s and proactively referring their motivated patients to a Quitline for more intensive counseling.

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RPOS3-93 PRELIMINARY FINDINGS ON THE EFFECTIVENESS OF PHARMACISTS’ SMOKING CESSATION SERVICES

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The effectiveness of a smoking cessation service provided by community pharmacists were evaluated during Phase I; Preparing community pharmacists for outcomes evaluation of smoking cessation. A randomized controlled trial was conducted. Smokers were divided into 2 groups. The intervention group (1) received individualized counseling, (2) set a quit date, and (3) were monitored for 6 follow-up times. The usual care group received standard generalized counseling. This included providing pamphlets with/without a new prescription. Fourteen of 35 community pharmacies in Bangkok who participated in a workshop organized by the Thai Pharmacy Network for Tobacco Control and had provided smoking cessation services agreed to join the study. They were each asked to enrol 4 smokers during a 5-month period. Outcome measurements were the rate of clients’ abstinence at 1 and 3 months as well as cigarette reduction using self report and verified by relatives of the smokers. From 41 smokers, all completed 1 month and 63.4% were enrolled long enough to complete the 3-month follow-up. At baseline there were no significant differences between both groups. At the end of 3 months, 12 out of 21 smokers were in the usual care group and 14 out of 20 smokers were in the intervention group. At 1 month, the usual care group had a higher abstinence rate than the intervention group (23.8% vs 15.0%) and also greater cigarette reduction (87.5% vs 75.0%). Similar trends occurred at 3 months. In contrast, among 3 smokers who abstained continuously, the percent of the intervention group at follow-up vs. the control group was 14.3% vs 1.4%, the intervention being the lack of program fidelity for the study arms. Only 60.0% of the intervention group had follow up monitoring at 1 month and this dropped further at 3 months; while 38.1% of the usual care group set a quit date when none should have. Pharmacists’ smoking cessation services were less effective than the usual care groups. The lack of program fidelity is a contributing factor. The data document how difficult it can be for community pharmacists to adhere with a protocol. This underscores the importance of ongoing observation and documentation when conducting RTC studies.

This study was conducted while the first author was at the Naresuan University. Supported by Thai Heath Promotion Foundation, 2005.

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RPOS3-94 ADDRESSING PARENTAL SMOKING BY CHANGING PEDIATRIC OFFICE SYSTEMS

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Background: Parental smoking is associated with poor health outcomes for children. The birth of a baby may represent an opportunity to address parental smoking in the context of protecting the child.

Objective: To test the feasibility and acceptability of enrolling parents into a telephone quitline during postpartum hospitalization.

Methods: Over 14 months, we assessed the smoking status of both parents of all newborns delivered at 1 hospital. Moms and dads who were current smokers (1 cigarette, even a puff, in past 30 days) or recent quitters (smoked since one month prior to conception) were eligible for the study. Enrolled parents were randomly assigned to the control or intervention group. The intervention included a brief motivational interview (MI), enrollment in the proactive state quitline, and follow-up faxes to the pediatric, OB, and PCP providers with tailored treatment messages. Outcomes were assessed at 3 months. Results: 101 (64%) of 159 eligible parents enrolled in the study (n=53 control, n=48, intervention). 71% were current smokers and 29% were recent quitters. All parents in the intervention received the MI; 94% had a fax sent to >3 adults; 72% accepted the quitline, and 41% accepted the follow-up faxes to providers. Conclusion: Enrolling moms and dads into tobacco treatment services during the immediate postpartum hospital stay is feasible, acceptable to parents, and appears to stimulate quit attempts. The birth of a baby may present a teachable moment to reach both parents and to provide cessation assistance.

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RPOS3-95 ADDRESSING PARENTAL SMOKING DURING THE POSTPARTUM HOSPITALIZATION

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RPOS3-96 AN EMPIRICAL ANALYSIS OF PUBLIC SERVICES IMPACTS ON CIGARETTE ADDICTION IN ARKANSAS AND THE USA

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Economic models of addiction include myopic and rational addiction models. While the myopic model explains the addiction based on the past consumption habits, the rational addiction model considers the effects of consumption from both the past and future consumption. In the rational addiction model of the Becker and Murphy (BM) (1988) which could explain both myopic and rational addiction models, the consumer’s utility of a good depends on the quantity of current consumption, the degree of current addiction, the past consumption as well as on the future consumptions. The BM accounts for the interdependencies among the past current, and future consumptions. The rational addiction model was empirically studied at the tobacco consumption and the coffee consumption. Smoking is proved empirically to be rationally addictive, not myopic. In this project, I use the rational addiction theory to determine the impacts that public services has on the cigarette smoking in Arkansas and the USA. The time series data of cigarette consumptions and prices in Arkansas and the USA were collected with the data of tobacco settlement funds, under effect since 1995 until 2005. A GLS regression of a modified BM function indicates that the public service in Arkansas could decrease cigarette consumption on per adult on average 0.53-0.69 packs since 2003 when the Arkansas tobacco public programs became active, which accounts for 0.7%5% of the total tobacco consumption in Arkansas. The dollar value of the public service in AR was $5.6-6.9 million, which were 43-45% of Arkansas settlement funds used for the tobacco related services. The nationwide impacts were much less than in the Arkansas with 5.8-7.3% of total USA settlement funds raised. These results suggest that the public service has the results from the lower level usage of the settlement funds for the tobacco related programs. This paper suggests that the more the settlement funds are used for the tobacco related programs, the more the tobacco consumption decreases.

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RPOS3-97  TRENDS IN NICOTINE, PH, AND MOISTURE LEVELS IN MOIST SMOKELESS TOBACCO PRODUCTS FROM 2000 TO 2005
Melanie Pickett*, M.P.H., Geoffrey Ferris Wayne, Vaughan W Rees, Ph.D., Gregory N. Connolly, D.M.D., M.P.H., Harvard School of Public Health, Division of Public Health Practice
Background: Manufacturers of smokeless tobacco may alter their products to control the amount of free nicotine that is readily absorbed. The most popular type of smokeless tobacco product, moist snuff, contains higher moisture, lower pH, and lower nicotine, and pH levels than loose-leaf products. This study investigated changes in moist snuff products from 2000 to 2005 using data provided by the smokeless tobacco manufacturers Swedish Match North America (SMNA), Conwood, US Tobacco, and Swisher International (SI).
Methods: Data was obtained from the Massachusetts Department of Public Health. Moist smokeless tobacco products were reported by type: Conventional, Pouch, and potentially reduced exposure products (PREPs). Other product characteristics investigated included cut (fine, long cut) and flavor (Regular, Wintergreen, Other). Data analysis examined changes in mean values (moisture percent, pH, total nicotine concentration (mg/g), and free nicotine percent) per year from 2000 to 2005 for each manufacturer, type, and flavor separately. Linear trends were tested using regression models that accounted for correlations within brands.
Results: From 2000 to 2005, Conwood products increased in mean free nicotine (38.8 to 47.8%) and mean pH (7.68 to 7.89). SMNA products also increased in mean nicotine (28.3 to 36.3%) and mean pH (7.57 to 7.71). Total nicotine increased among long cut products from 11.0 mg/g in 2000 to 21.1 mg/g in 2005, and fine cut products from 12.1 mg/g to 12.5 mg/g. Pouches, including PREPs, increased in mean nicotine (9.0 to 30.6%) and mean pH (6.74 to 7.51). The only observed flavor category to change was Wintergreen, which increased in total nicotine (10.8 to 11.2 mg/g).
Conclusions: From 2000 to 2005, changes in free nicotine, total nicotine and pH were detected among specific categories, but not within the whole set of moist smokeless products. Whether these changes were deliberate or a result of random yearly variation cannot be determined. Continued monitoring of these products is important to verify the observed trends, and to ensure that smokeless products are not becoming more addictive or toxic to consumers.

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RPOS3-98  MOVING TO SMOKE-FREE: THE CHALLENGE FOR LONG-TERM CARE HOMES IN ONTARIO, CANADA
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The Smoke-Free Long-Term Care Act came into effect May 31, 2006. Long-Term Care Homes (nursing homes and homes for the aged) could no longer maintain designated smoking rooms (DSR). Homes that had previously been smoke-free could no longer refuse to admit residents who smoke. This resulted in frustration and anger among Administrators and Directors of Care in the Long-Term Care Home sector. There was much media attention to the issue; the tone of the articles suggested the “cruelty of taking away their last remaining pleasure in life.” The Smoke-Free Long-Term Care Homes Project at the Centre for Addiction and Mental Health was funded by the Ontario Ministry of Health Promotion to meet this challenge and help these facilities with the transition to smoke-free. Change management strategies, education on smoking cessation and benefits of quitting for older adults were the key components of the support offered. This poster will describe the incremental steps taken, beginning with a broad brush approach, comprised of a series of teleconferences available to all of the approximately 600 Homes in the province of Ontario, followed by a number of regional workshops and finishing with on-site consultations and clinical case management. Print and electronic materials and resources were developed to complement the other modes of education and support. Proactive approaches were utilized for Homes who were received negative press with respect to smokers smoking outside and other particularly challenging issues. The issues arising, the barriers, and strategies will be described. Data will be presented that show the extent of the problem and how the Project was successful in easing the transition.

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RPOS3-99  SMOKING CESSATION QUITLINES: PROGRESS TOWARD A NATIONAL QUITLINE NETWORK
Paula A. Keller, M.P.H.*, Jeff Niederdeppe, Ph.D., University of Wisconsin Center for Tobacco Research and Intervention; Linda A. Bailey, J.D., M.H.S., North American Quitline Consortium; Timothy B. Baker, Ph.D., Michael C. Fiore, M.D., M.P.H., University of Wisconsin Center for Tobacco Research and Intervention
In 2004 and 2005, the North American Quitline Consortium (NAQC) surveyed quitlines in the U.S. and Canada to learn about tobacco cessation quitline organization, financing, and services (response rates 98% and 100%, respectively). We used these data to evaluate changes in U.S. quitlines since the launch of the federal National Network of Tobacco Cessation Quitlines initiative in November 2004. The number of states with quitlines increased from 74.5% in May 2004 to 100% in December 2005. The three most commonly reported fund sources of quitline services in both years were state governments, MSA funds, and the federal government. The median budget for quitline operations increased from $500,000 in 2004 to $621,697 in 2005, but the median budget for quitline promotion decreased from $325,000 in 2004 to $193,750 in 2005. The range of services provided by quitlines increased between 2004 and 2005. Provision of supportive counseling increased from 89% to 100%; provision of web-based information increased from 37% to 54%; and provision of web-based interactive counseling increased from 16% to 27%. In 2004, 37% of quitlines reported providing cessation medications at low or no cost; in 2005, this percentage increased to 45%. Eligibility criteria were used by quitlines in both 2004 and 2005: e.g., limiting services to persons who were ready to quit, who were uninsured, or received Medicaid. In 2005, states were asked how they used new funds from the CDC to either develop or enhance quitline services. 57% used the funds to expand quitline operations, 51% to purchase new marketing efforts, and 49% to increase collaboration with health care systems and providers. These findings may reflect the initial impact of the National Network of Tobacco Cessation Quitlines initiative. Overall, evidence-based services expanded between 2004 and 2005. Limitations to this study include lack of standardized reporting across states and changes to the NAQC survey between 2004 and 2005. Given shrinking federal budgets for tobacco control and the expected additional MSA payment to states in 2008, further research is needed to monitor changes in state quitlines.

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RPOS3-100  SUPPORTING CESSATION IN HOMELESS POPULATIONS USING FREE NICOTINE REPLACEMENT THERAPY
Roger Valdez, Tobacco Prevention Program Public Health, Seattle King County
We started with what we knew: Brief provider interventions with clients have a dramatic effect on improving quitting. But increasingly, we as a society are faced with reducing prevalence in the general population, that the addiction is concentrating among the poorest and the hardest to reach people in our community. Half of cigarettes purchased in the US are purchased by people with DSM IV category mental health issues and while locally smoking rates had been dropping dramatically among those who earn above $50,000 per year but staying the same among those who earn less than $15,000. The agencies that serve these people are mainly social service and mental health agencies and often the clients are homeless. Frequently these agencies see smoking cessation as a minor concern and even as a take away from their clients. Our efforts first met with skepticism, “How can you help homeless people quit smoking?” But we have persisted and have developed a program that included training focused on the disparity of smoking prevalence, teaching simple and non-confrontational intervention with clients, and providing easily accessible NRT in the form of “the patch.” The results have been subtle but dramatic. Our first numbers showed us that a small number of homeless clients had actually quit in the first month, but at least 100 had been talked with about their smoking and more than half had reduced the number of cigarettes they were smoking. The key has been the change in provider and agency attitude. Now instead of offering a client a cigarette to bond, case managers were offering support to beat the addiction. We are now working with more than half a dozen homeless agencies and systems that serve this population in our county and requests for training come in weekly. We are translating what we learned in a program that is beneficial to those who need it most. This work will begin to transform the social norms and expectations in our community so that being homeless or mentally ill does not have to mean being unhealthy. What we would share at the conference is how we developed our program and how it might be applied in various settings.

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RPOS3-101
DO SMOKING CESATION MEDIA CAMPAIGNS EXACERBATE SOCIOECONOMIC DISPARITIES IN SMOKING?

Jeff Niederdeppe*, Ph.D., Michael C. Fiore, M.D., M.P.H., Timothy B. Baker, Ph.D., and Stevens S. Smith, Ph.D., Univ. of Wisconsin School of Medicine and Public Health

Little is known about effective media strategies to promote smoking cessation among lower socioeconomic status (SES) populations. Some suggest that higher SES individuals benefit more from media campaigns than lower SES individuals, leading to increased disparities over time. This concern highlights the need to assess whether specific campaign message strategies exacerbate SES differences in smoking behavior. We examined the impact of televised anti-tobacco ads on cessation behavior in a longitudinal sample of 452 adult smokers participating in the Wisconsin Behavioral Health Survey (WBHS). 1,544 smokers were identified in the 2003 Wisconsin Tobacco Survey (WTS), 452 of who enrolled in the WBHS and completed a follow-up phone interview one year later. SES (education, income), smoking variables (cigarettes per day, intention to quit), and recall of two types of ads (how to quit [HTQ] and secondhand smoke [SHS]) ads were collected during the WTS interview. Past year quit attempts and self-reported smoking status (abstinent vs. smoking) were assessed in the WBHS follow-up interview. We used logistic regression to assess whether HTQ and SHS ads were associated with quit attempts and abstinence one year later. Interaction terms examined whether these relationships differed by SES. Neither HTQ nor SHS ads were associated with quit attempts or abstinence in the overall sample, but two significant interactions were observed (p<0.05). HTQ ad exposure was associated with a higher likelihood of making a quit attempt among those with a college degree (39% among non-exposed, 58% among exposed) but a lower likelihood of quit attempts among those who did not finish high school (39% among non-exposed, 21% among exposed). SHS ad exposure did not differ by SES but was associated with a higher likelihood of making a quit attempt among those with children (40% among non-exposed, 68% among exposed). Results suggest that HTQ ads were highly ineffective in prompting quit attempts among low SES smokers, and SHS ads appeared to be effective in prompting quit attempts amongst smokers with children. There remains a need to identify ads strategies that work with low SES smokers.

RPOS3-102
WORKING TOGETHER TO IMPROVE PERFORMANCE: THE PERFORMANCE INDICATORS MONITORING SYSTEM (PIMS)

Gala Arth*, Robert Schwartz, Ontario Tobacco Research Unit

Smoke-Free Ontario (SFO) is a large and complex undertaking. This 60 million dollar strategy involves a wide variety of prevention, cessation and protection programs and numerous governmental and non-governmental service providers. Currently, 36 Public Health Units and 15 Non Profit Organizations operate approximately 20 distinct programs. The provincial Ministry of Health Promotion has asked the Ontario Tobacco Research Unit to develop a performance reporting system to enable monitoring of these programs in a timely and efficient manner for ongoing management and for assessing SFO progress. The Performance Indicators Monitoring System (PIMS) will serve the management and accountability needs of managers and policy-makers at the provincial, regional, local and program levels. PIMS will integrate work planning, scopes of service agreements, ongoing monitoring and period reporting. The system includes data identifies as essential to stakeholders on inputs, activities, outputs and outcomes. PIMS affords the opportunity to plan, manage, and monitor more efficiently and effectively. The system will increase accountability, alter performance management, and assist with program development. Successful development and implementation of PIMS has depended on the participation of its users. Hence, the active involvement of program staff and the Ministry of Health Promotion in designing indicators will result in a well-utilized and user-friendly system. Thus, the development of PIMS represents the development of a standardized system of accountability to support the decision-making and performance management needs of the Ministry of Health Promotion. The goal being to help increase evidence-based decision making with regards to program planning, while supporting the Ministry of Health Promotion with performance management. Supported by the Ministry of Health Promotion.

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RPOS3-103
DIFFERENCES IN HOW MAJOR HEALTH WEBSITES CONVEY RELATIVE HEALTH RISKS FOR CIGARS: A COMPARATIVE ANALYSIS OF HARM REDUCTION INFORMATION

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Epidemiological evidence shows that smoking cigars is generally less dangerous than smoking cigarettes, however, health risks among cigar smokers are a function of inhalation patterns and the number of cigars smoked per day. Health communications stating only that cigars are not a safe alternative to cigarettes do not provide consumers with enough detailed information to make meaningful health decisions. Nevertheless, there is concern that comparative risk or “safer” messages will lead consumers to believe that cigars are “safe.” To investigate differences in how major health websites convey relative health risks about cigars, we conducted a comparative analysis of cigar harm reduction information available on three major health websites (i.e., American Cancer Society, Center for Disease Control, and the National Cancer Institute). Websites were analyzed to determine: (1) how each website communicated the comparative health risks of cigar smokers to the health risks of cigarette smokers and nonsmokers; (2) how each website addressed inhalation of cigar smoke and the number of cigars smoked; and (3) the complexity and readability of each website. Websites varied greatly in how they convey relative risks for cigars. Although one website did not include comparative health risk information about cigars, others went into complex detail about the relative risks. For example, one website included the following statement, “Lung cancer risk among daily cigar smokers who do not inhale is double that of nonsmokers, but significantly less than the risk for cigarette smokers” (NCI, 2006). Websites also varied in the extent of detail used to discuss inhalation. All websites reviewed were written at reading levels much higher (average level=12.4) than the NIH recommended 4th-8th grade general reading level. Although there is substantial variation across websites, detailed comparative risk information about cigars is available on several websites. This is noteworthy given the debate within the public health community over the inclusion of comparative risk information. Implications for the development of health communications will be discussed.

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RPOS3-104
TOBACCO WORLD: AN INTERACTIVE COMPUTER PROGRAM FOR TOBACCO PREVENTION WITH MIDDLE SCHOOL STUDENTS

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The Tobacco World is an interactive computer program that delivers engaging media to students in middle schools to educate them about the risks of tobacco use and peer and industry influences on their decisions about tobacco. Game-like activities are selected from an interface and students are able to access the sections of the program that aid in their learning about tobacco and negative health effects associated with tobacco. The program is designed as an adjunct to the health education curriculum and is designed to assist the teacher in covering a wide range of tobacco-related topics and promote preventive effects with students. The Tobacco World program was evaluated in a randomized clinical trial in 68 classrooms of middle school students in Oregon and California. The comparison of the treatment group (N=791) to the control group students (N=627) resulted in demonstrating significant effects on intentions to use tobacco, and other attitudinal variables shown to be related to the onset and use of tobacco. Exposure and use of the program was shown to be effective in reducing intentions to use tobacco through changing attitudes, social images, and beliefs about short and long term health consequences, perceptions of social images, subjective norms, and increases in perceived behavioral control. The design involved randomizing classrooms within schools and follow up was completed by students at one-month follow up. Additional analyses will be presented in the poster. The program has 9 game-like activities that can be used over a tow to three class periods by students and each activity has an exit quiz to assess key knowledge or attitudes taught in the program. The Tobacco World Program can be an effective adjunct to current tobacco education curricula and can enhance middle school tobacco prevention efforts by offering an engaging interactive computer based activity to supplement more traditional didactic teaching. The development of the program was supported by the National Cancer Institute with an SBIR grant to Deschutes Research.

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RPOS3-105 COMPARISONS OF POINT-OF-SALE TOBACCO PROMOTIONS AT TWO TIME POINTS PRIOR TO RESTRICTIONS OF TOBACCO RETAIL DISPLAYS

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Background: The retail point-of-sale (POS) environment has become critical for tobacco industry communications with current, former and potential smokers in Canada. In Ontario, regulations came into effect to restrict tobacco promotions at POS in March 2004. This research was performed in 2003 with POS in Ontario, observed at two time points prior to regulations. Restrictions focus on a subset of stores that increased promotions from the initial observation.

Methods: POS data were collected from 20 stores selected from lists of convenience stores, gas stations and grocery stores in 20 cities across Ontario (n=481 stores). Wave 1 of data collection took place in 2005, with trained observers capturing the range and intensity of tobacco promotions. At wave 2, data were collected at a subset of the original stores (n=264), during the three weeks prior to regulation implementation. A tobacco promotion index was calculated for each store, measuring powerwalls, countertop displays, presence of tobacco near candy and cigarette ads. Frequencies and cross-tabulations were calculated.

Results: At wave 2, many stores were already in compliance with the regulations, although 41 (16%) had increased their tobacco promotions. Compared to wave 1, 17 (42%) of the stores with increased promotions now had price signs on their powerwalls; 9 (22%) now had shelf gliders on the powerwalls; 9 (22%) now had indoor cigarette ads/signs; and 9 (22%) now had outdoor cigarette ads/signs. Fifteen (37%) of these stores were independent convenience stores and 8 (20%) were supermarkets.

Discussion: This presentation will describe tobacco promotions at POS in their amount of tobacco signage. Adherence to the restrictions was high even before the implementation date. Upcoming data collection will further examine compliance and identify any new tobacco promotional strategies at point-of-sale.

This research is funded through the strategic initiative Advancing the Science to Reduce Tobacco Abuse and Nicotine Addiction. This initiative is a partnership of government and non-profit organizations under the coordination of the Canadian Tobacco Control Research Initiative (CTRI), www.ctcri.ca.

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RPOS3-106 MODELED FEWER CURRENT AND FUTURE CORONARY HEART DISEASE DEATHS ATTRIBUTABLE TO REDUCED SMOKE POLLUTION IN MASSACHUSETTS FROM 1993 ONWARDS


To investigate how many fewer coronary heart disease (CHD) deaths occurred in 2003 relative to 1993 that could be attributed to reduced smoking prevalence in Massachusetts and to project the preventable CHD deaths in 2010 based on two scenarios, we used a previously validated cellular epidemiological CHD mortality model, the IMPACT Model. The IMPACT CHD Mortality Model integrates CHD mortality and population data from the NCI’s Surveillance, Epidemiology, and End Results Mortality Database for the base year 1993 and again for the year 2003, stratified by age and sex. A rigorous sensitivity analysis of one-way extremes method was performed. An overall 29% decline in the population-standardized smoking prevalence (from 21% to 15%) with a decrease in age-adjusted 31% CHD mortality rate (from 199 to 137/100,000 persons) occurred between 1993 and 2003 in 25-84 year age groups. The numbers of CHD deaths prevented/postponed were 425 (min 325; max 740) in 2003 from an expected 3,365 extra life years (min 2,695; max 5,050), with males and younger age groups (25-44 year-olds) showing greater benefits. If the smoking prevalence from 1993 to 2003 simply continued then the Healthy People 2010 objective of 12% overall smoking prevalence could be achieved, with 115 fewer CHD deaths (min 60; max 170). If the most recent smoking prevalence of 2003-2005 was assumed to continue, then 75 (min 45; max 105) fewer CHD deaths would be projected. This projected an overall smoking prevalence of 13%, thereby not achieving the Healthy People 2010 objective. In conclusion, a comprehensive tobacco control program similar to the Massachusetts Tobacco Control Program that was introduced in 1993 may have prevented more CHD deaths if sustained and expanded on to other States and countries.

Zubair Kabir is a Post-Doctoral Research Fellow funded through an All-Ireland Cancer Institute (US) and the Health Research (Ireland) Joint Research Fellowship.

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RPOS3-107 TOBACCO SMOKE POLLUTION IN OUTDOOR HOSPITALITY ENVIRONMENTS—A STUDY OF PM2.5 LEVELS IN RESTAURANTS AND BARS

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Outdoor smoking is one of the last areas for legislative attention and it’s an issue that many jurisdictions have struggled with, in part, because the research in this area is limited. We focused these studies specifically in bar settings and we selected venues where the patio was directly adjoined to an inside area of the bar where patrons would be. We measured air quality, specifically particulate matter smaller than 2.5 microns in diameter (or PM2.5) which is an established proxy for tobacco smoke pollution. This study measured the air quality inside a bar where smoking was not allowed while simultaneously measured the air quality outside on the adjoining patio where it was permitted. This study was designed to look at two broad questions: (1) How smoky does it get on an outdoor patio where smoking is permitted? We wanted to begin to quantify the levels of tobacco smoke pollution on outdoor patios and see if levels could be considered hazardous; and (2) Can CSP in outdoor settings compromise indoor environments—comparing the policies and laws established to protect indoor air quality. With peak outdoor readings reaching over 5000 micrograms/m3, and average PM2.5 readings reaching up to 120 micrograms/m3, it can be concluded that outdoor environments do reach levels similar to average indoor readings where smoking is permitted — and that these levels would be classified as unhealthy for most individuals.

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RPOS3-108 USE OF A COMMERCIAL MAILING LIST TO RECRUIT SMOKERS: A CAUTIONARY TALE

Jennifer B. McClure, Ph.D.*, Julie Richards, M.P.H., Emily Westbrook, Etvette Ludman, Ph.D., Center for Health Studies, Group Health Cooperative.

The tobacco industry frequently contracts with List Management companies to collect lists of smokers, which they use for direct marketing. If a similar approach could be used to recruit smokers for treatment, it could have important implications for treatment dissemination. We evaluated this strategy in the Get PHIT study. All Get PHIT participants receive a free health risk assessment, advice to quit, and access to free treatment if they choose to quit smoking. We purchased a commercial mailing list of smokers from a reputable vendor, after carefully researching several companies and choosing the most up to date data available. All people on the list described themselves as adult smokers on product warranties, consumer surveys, and other voluntary information sources in the past 3 years. Contact information was reportedly updated through the National Change of Address database quarterly. The purchased list included 6,785 records from pre-specified zip codes in western Washington. Eight percent were eliminated due to bad contact information based on our initial visual review of the records. We attempted to contact 460 (7.4%) people on this list by mail and phone to invite them to participate in the Get PHIT study. This group, 387 (84%) could not be reached after multiple attempts. Of those reached, 19 refused screening. 41 were ineligible (half were not smoking), 13 were eligible, and 2 people ultimately enrolled in the study (<1% of those attempted to be contacted). Based on the outcome, we discontinued use of the mailing list as a recruitment tool. Commercial mailing lists offer great promise because they can be used to recruit smokers for treatment, it could have important implications for treatment dissemination. We evaluated this strategy in the Get PHIT study. All Get PHIT participants receive a free health risk assessment, advice to quit, and access to free treatment if they choose to quit smoking. We purchased a commercial mailing list of smokers from a reputable vendor, after carefully researching several companies and choosing the most up to date data available. All people on the list described themselves as adult smokers on product warranties, consumer surveys, and other voluntary information sources in the past 3 years. Contact information was reportedly updated through the National Change of Address database quarterly. The purchased list included 6,785 records from pre-specified zip codes in western Washington. Eight percent were eliminated due to bad contact information based on our initial visual review of the records. We attempted to contact 460 (7.4%) people on this list by mail and phone to invite them to participate in the Get PHIT study. This group, 387 (84%) could not be reached after multiple attempts. Of those reached, 19 refused screening. 41 were ineligible (half were not smoking), 13 were eligible, and 2 people ultimately enrolled in the study (<1% of those attempted to be contacted). Based on the outcome, we discontinued use of the mailing list as a recruitment tool. Commercial mailing lists offer great promise because they can be used to recruit smokers for proactive outreach, intervention, or study recruitment; however, our experience suggests that the quality of data available through these sources may not make them a viable resource for these efforts. To further illustrate this point, comparative recruitment data from other smoking registries (e.g., health plan and state quitline data) will also be presented.

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RPOS3-109 TEST-RETEST RELIABILITY OF LIFETIME SMOKING TRAJECTORIES

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The Lifetime Tobacco Use Questionnaire (LTUQ) is a web-based retrospective survey that aims to capture individual differences in the natural history of tobacco use. The LTUQ was administered to a randomly selected sample of survey panel members twice, 2 months apart. Wave 1 data were collected from 2,332 lifetime regular smokers (smoked 100+ cigarettes) aged 18-65 (57.5% women, 87.5% white); of these, 703 completed the LTUQ at wave 2 (57.8% women, 89% white). Cigarette smoking trajectories were determined empirically using multinomial mixture models in SAS (TRAJ) with sex and race as covariates. Number of cigarettes smoked per week (z score) was the dependent variable and age at first experimentation, age of onset of regular smoking (at least once per week for at least one month), age of onset of daily smoking (at least once per day for at least one month), and age at time of survey represented the four consecutive time points. Test-retest reliability (weighted kappa) was estimated for 3-, 4-, and 5-trajectory group solutions. At both waves, the 3-group solution consisted of a low-level smoking group, a group that linearly increased their smoking over time, and a group that smoked at high levels and slowly decreased their smoking over time. Test-retest reliability for the 3-group solution was 0.33 (95% CI: 0.25, 0.41). The 4-group solution at both waves included the same three groups plus a fourth group that in wave 1 consisted of smokers who very slowly increased their smoking over time, while in wave 2 the fourth group consisted of persistent heavy smokers. Test-retest reliability for the 4-group solution was 0.04 (95% CI: -0.01, 0.08). The 5-group solution at both waves showed a split of each of the low and high smoking groups into two groups and had similar reliability as the 3-group solution (0.32, 95% CI: 0.25, 0.38). The results show that it is possible to use a cross-sectional survey to reconstruct lifetime smoking trajectories, which are very similar to trajectories reported in prospective studies. However, the reliability of the smoking trajectory solutions may be limited by the small number of time points, small sample size, and method of analysis.

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RPOS3-110 IN SITU CARBON MONOXIDE, “TAR,” AND TOPOGRAPHY MEASUREMENTS FOR 20 NARGHILE WATERPIPE SMOKERS IN NATURAL SETTINGS USING A NOVEL SMOKE SAMPLING DEVICE

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This study reports in situ measurements of CO and “tar” intake of 20 narghile waterpipe smokers in Beirut cafés and homes using a novel real-time smoke sampling/topography instrument. Whenever a smoker draws a puff, approximately 2% of the smoke is proportionally sampled from a special mouthpiece by a computer-controlled miniature pump. The sample passes through a particulate trap and into a Teflon bag for offline chemical analysis. The instrument has been validated by attaching it to a laboratory waterpipe smoking machine and comparing mainstream and sampled smoke composition. By sampling the smoke as it is generated by real smokers in their natural settings, difficulties associated with reproducibly simulating smoking idiosyncrasies in laboratory smoking machine studies are avoided. Using this instrument, a pilot study was conducted in two cafés (n=11 participants, 10 men, mean age=27), and homes (n=9 participants, 5 men, mean age=24) in Beirut, Lebanon. The objectives of this study were to measure toxicant intake and smoker topography of waterpipe tobacco (ma’assel) smokers in their natural settings, and to compare these to previous toxicant yield data derived using a laboratory smoking machine. Results showed that smokers inhaled 111.4±0.11 milligrams CO (mean±standard error) and 350±120 milligrams “tar.” Mean smoking time, puff duration, interpuff interval, number of puffs, puff volume, and total inhaled smoke volume were 48±6.1 minutes, 2.8±0.08 seconds, 15.2±6.59 seconds, 178±6.4 puffs, 0.59±0.02 liters, and 95.6±4.7 liters, respectively. Inhaled CO and “tar” mass increased monotonically with inhaled smoke volume (R-square of 0.58 and 0.64), with an average slope of 1.2 and 3.7 milligrams/liter respectively. These data are comparable to previous smoking machine study data, and confirm that—contrary to the widespread perception that the water bubbler renders the smoke safe for consumption—CO and “tar” intakes by narghile waterpipe smokers during a single use session are many times greater than those associated with a single cigarette.

Research for International Tobacco Control (IDRC, Canada).

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RPOS3-111 SELF-REPORTED SMOKING IN ONLINE SURVEYS: PREVALENCE ESTIMATE VALIDITY AND ITEM FORMAT EFFECTS

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Objectives: We assessed validity of self-reported smoking prevalence estimates from an online sample, and explored the impact of different item response formats on estimates.

Methods: Self-reported current smoking status was obtained from 110,837 respondents from the Harris Poll Online (HPOL) panel from April 2004 to January 2005. Current smoking prevalence was compared to national estimates from the 2004 Behavioral Risk Factor Surveillance System (BRFSS), 2003 National Health Interview Survey (NHIS), and 2001-2002 National Health and Nutrition Examination Survey (NHANES). All estimates were weighted to reflect the U.S. population. A separate survey section measured smoking prevalence using randomly assigned response formats, including yes/no grid, multiple response, numeric box, category grid, and drop-down box formats.

Results: 24.0% (95% CI: 23.7-24.4) of HPOL respondents reported current smoking. BRFSS, NHIS, and NHANES estimates found 20.9%, 21.5% (95% CI: 20.9-22.1), and 24.9% (95% CI: 22.4-27.5), respectively, reporting current smoking. An additional 4.5% of NHANES respondents reporting not smoking had cotinine levels >15 ng/mL, indicating current smoking. Estimates of smoking prevalence varied by prevalence period and response format.

Conclusions: Prevalence estimates obtained from the HPOL panel are comparable to those from national surveys. Online response format choices result in variation in estimated behavioral prevalence. Online surveys may be useful for public health surveillance of the U.S. population.

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RPOS3-112 FUNGI IN HOMEGROWN TOBACCO MAY ADD TO SMOKEING HAZARDS

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Background: The health-risks associated with tobacco are almost exclusively directed at the chemicals derived from the plant leaf itself, to chemicals added during processing, and to combustion products of these. However, as a biological material, tobacco leaf is also susceptible to growth of fungi, particularly during processing and storage. Fungi potentially present two hazards; from inflammatory respiratory diseases directly associated with exposure to the inhaled spores, and secondly, from cancer-inducing mycotoxins associated with some fungal species. Our experience is that commercial tobacco is treated to prevent fungal growth, but this is not the case with “home grown” tobacco, which is preferred by some, as it is cheap and believed to be “safe.” This study aimed to identify the types of fungi present in a variety of “homegrown” tobacco samples, identify whether these species were associated with mycotoxin production and directly measure aflatoxins in a sub-sample of tobacco.

Methods: 43 samples of homegrown tobacco were obtained via smoker’s clinics; samples of were plated onto DRBC agar and further subcultured for identification of mycotoxin-producing species. 6 samples were analyzed by HPLC for aflatoxins. Results: 81% contained fungi (56% >100 fungal colonies/g). The predominant genera were Aspergillus, Penicillium and Alternaria. 51% of samples contained A. flavus and 31% of A. flavus produced aflatoxins by culture. No aflatoxins were detected by HPLC.

Conclusions: Most “home-grown” tobacco samples contained significant quantities of fungi. Many of these are associated with the cause of recognized respiratory health risks, such as extrinsic allergic alveolitis and the production of potentially carcinogenic mycotoxins. Such fungi would add to the existing hazards associated with tobacco use and this study refutes folk-wisdom that homegrown tobacco may be intrinsically “safer” than commercial tobacco.

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**RPOS3-113 TRADITIONAL TOBACCO USE IN CALIFORNIA**

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- Problem/Objective: Virtually little information exists about how traditional tobacco is used and respected by California tribal leaders and members. Traditional tobacco use can indicate many diverse ways of using various types of tobacco depending on the group and region of the American Indian community.
- Methods: 10 in-depth over the telephone interviews were conducted with adult American Indian community leaders in California. Respondents had the knowledge of tobacco use in their respective community and/or worked with a tobacco education program in their respective communities. A 30-minute survey was implemented asking open and closed-ended questions about traditional tobacco use, access to tobacco, use of commercial tobacco for traditional purposes, gender and age differences of traditional tobacco use, and views about native-owned tobacco products.
- Results: The findings from this qualitative study provide important preliminary information about how tobacco is used in a cultural way whether it is homegrown, wild, or commercial bought tobacco. All respondents stated that tobacco is used in a cultural or traditional way in their communities, for prayer, healing, medicinal purposes, sweat lodges, funerals, and as a gift to show respect to an individual. Access to tobacco for cultural uses includes being grown by a community member, picked where tobacco grows wild, or purchased in a store to use commercial tobacco. The gender differences indicated that both males and females use tobacco in a traditional way. Males are more likely than females to take the lead in a particular ceremony. All respondents said that smoking is allowed in the casinos in their communities and that they have friends or relatives who work in casinos and are exposed to second-hand smoke.
- Conclusions: Continual efforts are needed to create health education messages to encourage AI community leaders to not use commercial tobacco as a substitute for traditional tobacco. In addition, casinos need to continually be encouraged to create smoke-free areas or room to reduce exposure to secondhand smoke for their employees and patrons.

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**RPOS3-114 THE ROLE OF INFORMATION AND EXPERIENCE IN SMOKERS' EVALUATIONS OF A NON-SMOKE POTENTIAL REDUCED EXPOSURE TOBACCO PRODUCT**

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Cigarette smoking remains a leading cause of death and disability in the United States. As many smokers cannot or will not quit smoking immediately, there is growing interest in learning about strategies to reduce the health harms associated with smoking. Potential Reduced Exposure Products (PREPs) are tobacco products that claim to reduce exposure to many of the harmful toxins in cigarettes and tobacco products. Some non-smoked PREPs are promoted by the manufacturer for use when smokers “can’t smoke.” It has also been suggested that smokers could use some PREPs, especially non-smoked products, for harm reduction. Little is known about how smokers (1) respond to harm reduction or other suggested uses of non-smoked PREPs, (2) evaluate non-smoked PREPs, (3) compare these products to cigarettes, and (4) describe their intentions to use such products in the future. Current smokers (n=40) were recruited to evaluate information about using a non-smoked PREP tobacco product and sample the PREP in the lab. Using an anchored 7-point scale, participants evaluated a message that suggested use of a non-smoked PREP for qualities such as novelty (mean score 5.5 + SEM 0.3), comprehensibility (mean score 6.4 + 0.1), and relevance (mean score 5.5 + 0.2). Next, participants sampled the product in the lab and rated their satisfaction with the sample alone (mean score = 4.6 + 0.2) and in comparison to cigarettes (mean score 4.4 + 0.3). Participants rated likelihood of trying the product ever again (68%, n=27), as a substitute when they couldn’t smoke (58%, n=23), and to try to quit smoking (75%, n=30). These results indicate interest among some smokers in using non-smoked PREPs, particularly to aid smoking cessation. Implications for further research will be discussed.

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**RPOS3-115 A STUDY DESIGN TO INVESTIGATE THE INFLUENCE OF ISO TAR YIELD AND TAR BAND SWITCHING ON CIGARETTE SMOKE DOSE AS DETERMINED BY FILTER ANALYSIS AND BIOMARKERS OF EXPOSURE**

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- Two methodological approaches have previously been used to achieve estimates of human smoke exposure, namely filter analysis and biomarkers of exposure. Filter analysis estimates the maximum amount of smoke that exits the cigarette filter and is taken into the mouth (mouth level exposure). Conversely, biomarkers of exposure use the level of biomarkers of specific smoke components in biological media (urine, blood or saliva, for example) to estimate smoke uptake into the body. Past studies have shown both good and poor correlations between mouth level and biomarker exposure estimates, depending on the smoke component in question [Ricker et al., 1981, Russell et al. 1982]. Studies using filter analysis have shown that smokers of lower tar yield products have lower mouth level exposure of “tar” and nicotine than smokers of higher yield products [Shepperd & Mariner, 2001]. However, data from biomarker studies are less conclusive. Some have shown a dose response for nicotine and metabolites, but for other smoke components such as pyrene and NNK there appears to be no significant differences in the levels of biomarkers of exposure found in the body fluids in groups of cigarette smokers over a range of tar yields [Benowitz et al., 2005, Hecht 2005]. Since these studies have not taken into account smoke retention or metabolism differences between individual smokers, the correlation between mouth exposure and biomarkers may be partially dependent on these aspects. Therefore, by incorporating smoke retention measurements and tar band switching into a filter analysis/biomarkers of exposure study, a design has been developed to further investigate the level of correlation between these exposure measures. The design includes comparison of the level of estimated human cigarette smoke exposure in smokers of a range of ISO/FTC tar bands and non-smokers as well as the influence of switching to a lower tar band.

**No funding.**

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**RPOS3-116 WHY DO SMOKERS SWITCH TO LIGHT CIGARETTES?**

Joni Jensen*, Zhong-ze Li, Marc Mooney, Dorothy Hatsuksami, University of Minnesota Transdisciplinary Tobacco Use Research Center

- Introduction: In the past, the tobacco industry had implied that the “light” cigarette was a safer tobacco product or an alternative to quitting smoking. Advertisements like “Considering all I’d heard, I decided to either quit or smoke True. I smoke True” were prevalent. But that was in the 1970s. Does today’s smoker believe that a “light” cigarette is a safer alternative or are there other reasons for switching to a light cigarette?
- Method: Cigarette smokers contacted the Tobacco Use Research Center to be screened for eligibility for a study using a new tobacco product as a step toward becoming smoke-free. Potential subjects were asked about their current smoking patterns, tobacco use history and health history.
- Results: Subjects (N=767) were male (49%) and female smokers who smoked 19.2 cigarettes per day (SD=9.5; range 0-80) for 22.7 years (SD=12.6). Subjects were very interested in quitting smoking (mean 9.3 on a 1-10 motivation scale) with a median of 3 previous quit attempts (mean 0-300). Thirty-nine percent (n=283) reported smoking a “light” cigarette and 11% (n=80) reported smoking “ultra-light” at the time of the questionnaire. Another 27% (n=194) of subjects did not currently smoke a “light” or “ultra-light” cigarette, but reported switching to a light cigarette in the past. Subjects were asked the open-ended question: “Why did you change to a ‘light’ cigarette (that is, one with lower tar and nicotine levels)?” Multiple reasons could be given. The reasons endorsed for switching to a “light” cigarette included: it was healthier/smoker (31%); it was cheaper/smoker (18%); as a step toward quitting (33%); due to a cough/ill (7%); for the taste (5%); it was cheaper (4%); was better for me/healthier/smoker (31%); it was smoother/less harsh (18%); as a step of trying the product ever again (68%, n=27); as a substitute when they couldn’t smoke (58%, n=23); and to try to quit smoking (75%, n=30). These results indicate interest among some smokers in using non-smoked PREPs, particularly to aid smoking cessation. Implications for further research will be discussed.

**Conclusion:** Many smokers reported they had smoked a “light” cigarette because it was “safer” or as a step toward quitting indicating misperceptions of the potential benefits of using these products. New potentially reduced tobacco products (PREPs) are emerging in today’s market and the “light” experience should be a lesson learned so that public misperception of PREPs can be carefully avoided.

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RPOS3-117 ANALYSIS OF ENVIRONMENTAL TOBACCO SMOKE RESEARCH AT THE NATIONAL INSTITUTES OF HEALTH

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Background: Despite recent State Tobacco Control Policies on indoor smoking, environmental tobacco smoke (ETS) remains a serious public health hazard. The 2006 Surgeon General’s Report on Involuntary Tobacco Smoke confirmed children and adults exposed to ETS are at increased risk for lung, heart, and other diseases. ETS has been linked to lung cancer in adults and is suspected to play a role in eventual lung cancer development among children exposed to ETS. In addition, research questions about ETS and its relationship to cancer, i.e., head/neck, cervical, breast and other cancers, are still unanswered.

Aims/Methods: We conducted analyses of the NIH and NCI grant portfolios to identify currently funded ETS research and determine if gaps and inconclusive research results identified in the Surgeon General’s Report on ETS are addressed by NIH-supported research, particularly in cancer. For complete search results, commonly used ETS synonyms were queried. Grant information was retrieved from the publicly available CRISP database and the NIH IMPACII database.

Results. NIH currently funds 61 ETS grants. Of these, 36% focus primarily on ETS; half are behavioral intervention studies. Most studies examine ETS’ relationship to disease outcomes. Asthma is the most frequent disease studied. NCI currently funds 20 grants on ETS; 5 focus primarily on ETS and most are intervention studies. Only 3 ETS grants examine cancer outcomes: lung cancer, head/neck cancer, and non-Hodgkin’s lymphoma.

Conclusion: Some research gaps identified in the Surgeon General report on ETS and cancer are not addressed in the NIH and NCI portfolios. No studies are currently funded on breast and cervical cancer risk and ETS exposure. Studies on early-life exposure to ETS and future development of tobacco-related cancers also are lacking. Although there is clear evidence of the health effects of ETS, unanswered scientific questions remain that could be addressed in future research.

No funding.

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RPOS3-118 RETAIL PROMOTION AND PRICING STRATEGIES FOR NEW SMOKELESS, SPITLESS PRODUCTS IN TEST MARKETS

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New smokeless, spitless products have been test marketed in Austin, TX (Skoal Dry and Camel Snus), Portland, OR (Camel Snus) and Indianapolis, IN (Taboka). We used standardized observations of a random sample of stores in each community to determine product availability, number and characteristics of advertisements, product placement, and prices compared to premium cigarettes (Camels or Marlboros) and compared to Skoal Bandit. In their respective test markets, Taboka (TA) was most available (90% of samples stores), compared to Skoal Dry (SD: 59%) and Camel Snus (CS; 28%). TA was also most heavily advertised (mean 1.95 ads per store with product availability) compared to CS (1.63) and SD (0.5). CS was most readily recognized in stores because of distinctive neon-lighted refrigerated display units on counters. Pricing was most competitive for SD (mean $2.99), followed by TA (mean $3.54). SD was often available with an introductory $0.99 price; TA with 2-for-1 pricing. However, the mean price of CS ($4.77) was higher than a pack of Camel cigarettes ($3.37) or a can of Skoal Bandit ($4.23), with no introductory pricing found for CS. Differences in promotional messages will be discussed. Conclusions: These new products are being introduced with significantly different strategies, offering potential opportunities for determining which strategies will likely result in more uptake of the products among cigarette/snuff users and experimenting adolescents.

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RPOS3-119 IMPACT OF THE TORONTO BAN ON SMOKING IN BARS ON EMPLOYEE EXPOSURE TO SECONDHAND SMOKE

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Secondhand smoke is a significant cause of cancer, heart and respiratory disease. Bar and restaurant staff can receive substantial exposure to secondhand smoke in hospitality workplaces that allow smoking because of high concentrations of smoke and increased respiratory rates due to exertion. Studies in California, New York and Ireland have shown that bars reduce exposure for workers. We carried out a four-wave study of non-smoking barworkers’ exposure to secondhand smoke in Toronto, Ontario, which banned smoking in bars in June 2004, with Windsor Ontario, which did not implement a ban at that time, as a control. Both self-report and biochemical measures were employed. We measured urinary cotinine concentration after three consecutive shifts, before and at three points after implementation of the Toronto bylaw, including a cold weather measurement, nine months after the ban. We also conducted personal interviews at each time period, including smoking history, work history and experience, bar compliance with restrictions and total 3-day exposure to secondhand smoke at work and elsewhere. At baseline, almost all (93%) exposure occurred on working days on the job. The Toronto ban resulted in a significant and lasting reduction in exposure to secondhand smoke among employees. For these non-smoking barworkers, the workplace ban was associated with a significant reduction in urinary cotinine from baseline to post-ban, with a sustained reduction through waves 3 and 4; in Windsor, cotinine levels were stable throughout the four time periods. Analyses using regression models, adjusted for non-work exposure time and urinary creatinine, showed significant reductions in all three post-ban waves compared to baseline. Reported time exposed to second hand smoke was also substantially reduced in Toronto from pre- to post-ban, whereas no significant reduction occurred in Windsor. Our findings support the effectiveness of workplace bans in reducing worker exposure to secondhand smoke, even in winter months when smokers cannot sit outside. Such studies provide a scientific basis for promoting bans in all workplaces where workers are exposed to secondhand smoke.

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RPOS3-120 USING COMPUTER KIOSKS FOR HEALTH LITERACY ON SMOKING CESSATION AWARENESS

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Health literacy concerning the use of tobacco is a key focus strategy to help empower people in the path of health promotion. Portugal is a country with 1.6 million estimated smokers that has ratified the WHO Framework Convention on Tobacco Control. Although tobacco consumption has been decreasing, with the prevalence of smokers within the population age group over 15, situated at 19.5%, critical issues still remain. Smoking increase that is verified in women as well as in the 35-44 age group, deserves a special concern. The objective of our study was to access the acceptance of a COMPUTER KIOSKS FOR HEALTH LITERACY ON SMOKING CESSATION AWARENESS in a hospital setting. A kiosk was built with a progressive step by step approach based on the Fagerstrom tolerance scale score and motivation to stop using tobacco. Information about where to find help in the National Health Service system was accessible. A group of 855 persons are active in the data base. The kiosk seems to answer two objectives: assist health professionals in their task, and help women and adult males to reinforce their decision to stop smoking. Time and resources are needed to understand more fully the real implications of a large use of this type of intervention in the Portuguese context. Further research will have to clarify the effectiveness of this approach with a pilot study once the experimental period is over.

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RPOS3-121  
**STEPWISE REDUCTION OR QUIT DAY? REVISION AND EVALUATION OF THE SMOKING CESSATION PROGRAMME “A CHANCE FOR SMOKERS—SMOKE FREE IN 10 STEPS”**

Gradi, S., Kröger, C., Flöter, S., Metz, K., Piontek, D., Donath, C.

**Background:** Since 1990 the IFT has been taken care of the Federal Centre for Health Education (BZgA) smoking cessation programme “Smoke free in 10 steps.” It's the only programme in German-spoken countries with a stepwise reduction procedure. With a data base of over 1,000 active course instructors it is the most widespread programme in Germany. Its last revision took place in 1996; the programme’s effectiveness has been proven the last time in 2003/2004. Abstinence rates of 21.5% after a six months follow-up are reported (intent-to-treat-analysis).

**Purpose:** The programme shall be up to the newest scientifically standard in the field of smoking cessation. Furthermore it shall achieve higher success rates than the previous programme.

**Methods:** The revision has been carried out on the basis of the evaluation results carried out by the IFT in 2003/2004. Feedbacks from experts in practice were considered as well as the evidence-based scientific findings of smoking cessation (Fiore et al. 2000; Lancaster & Stead 2000, Wang et al. 2005).

By means of a quasi-experimental control group design 415 participating smokers are interviewed three times (pre-test, post-test and a six months follow-up) with regard to their smoking behaviour. A group of smokers (N = 416) who have been treated by the same course instructors in the previous evaluation study will serve as a control group.

**Results:** The revised programme is characterized by a quit day. The stepwise reduction of smoking was abolished. The new multimodal programme comprises six sessions instead of ten sessions in the former programme. It includes new therapeutic techniques, information for nicotine replacement and a booster telephone counselling. Smoking abstinence at 6 months follow-up was significantly higher in the intervention group who did the quit day (44.2% vs 21.5%; p = .00) than in control group with the former reduction-wise programme.

**Conclusion:** The revised programme with its quit day is more effective than the previous programme with its stepwise smoking reduction. Furthermore it is more attractive regarding its new matters and it has a higher acceptance among course instructors and participants.

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RPOS3-6  
**THE USE OF THE CRH-ANTAGONIST, ASTRESSIN, AND THE AVP ANTAGONIST (SSR149415) TO INHIBIT THE NICOTINE STIMULATED RELEASE OF ACTH AND CORTICOSTERONE ON THE HPA AXIS**

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Nicotine is a well-known addictive drug. Acute intake of nicotine activates the hypothalamic-pituitary-adrenal (HPA) axis. Nicotine, after binding to nicotine receptors, releases CRH and AVP in the brain. AVP antagonist (SSR149415) antagonizes the AVP stimulation of ACTH, by blocking V1b receptor, while peptide analogs of CRH inhibit CRH binding to its receptors and antagonize its actions in vivo and in vitro. We hypothesized that nicotine intake will stimulate hypothalamic CRH and AVP and raise ACTH and corticosterone levels. We will test whether the increase in hormonal levels can be blocked by pretreatment with AVP receptor antagonist and by using the peptide CRH R1 antagonist, astressin. This will allow us to determine if the nicotine-stimulated release of ACTH and corticosterone is mediated by AVP or the CRH. SSR149415 increased the levels the levels of nicotine induced corticosterone levels and inhibit nicotine induced Beta-Endorphin levels. Astressin inhibited nicotine-stimulated release of ACTH and corticosterone, indicating that ACTH release is mediated by CRH-R1 and AVP. These results may lead to the development of CRH-R1 and AVP antagonists to decrease the pleasurable component of nicotine, which may be mediated by corticosterone.

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