HUMAN METABOLISM OF NICOTINE

Neal L. Benowitz, M.D.*

Consideration of metabolic and pharmacokinetic processes are central to our understanding of the effects of nicotine and tobacco in people. Nicotine is extensive- ly metabolized to cotinine, and cotinine to 3-hydroxycotinine, primarily by the liver enzyme CYP2A6. Several gene variants of CYP2A6, associated with reduced or accelerated metabolic activity, have been identified. Gene variants associated with slower metabolism of nicotine occur more frequently in Asians (allele frequency about 30-50%) compared to whites or African-Americans (allele frequency 10%). There is great individual variation in the rate of nicotine metabolism. About 50% of that variation is genetic-based on twin studies - but the specific genes that explain most of the genetic variability have not been identified. Nicotine is metabolized rap- idly, such that liver blood flow is a determinant of clearance rate. Food increases and sleep decreases liver blood flow, which are associated with increased and decreased nicotine clearance respectively. Smoking inhibits decreases nicotine metabolism, most likely an effect of nicotine on its own metabolism. Female sex hormones affect nicotine metabolism. The clearance of nicotine and cotinine are faster in women com- pared to men, and among women are faster during pregnancy and with oral contra- ceptive use. Racial differences in nicotine metabolism have been observed. Compared to whites, African-Americans and Chinese-Americans metabolize nicotine and cotinine more slowly. Menthol appears to inhibit nicotine metabolism and may contribute to slow nicotine metabolism in African-Americans. Individual differences in nicotine metabolism may be important determinants of smoking behavior, risks of smoking related disease, and safe and effective dosing of nicotine medication to aid cessation.

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SYM1B

HUMAN AND MONKEY NICOTINE METABOLISM:
VARIATION FROM GENETIC AND REGULATORY SOURCES

Rachel F. Tyndale, Ph.D.*, Kerri A. Schoedel, Anna M. Lee, Edward M. Sellers, M.D., Ph.D., University of Toronto, Canada

Nicotine metabolism/inactivation in humans is mediated predominantly by the hepatic enzyme CYP2A6. There is considerable interindividual variation in rates of nicotine metabolism. Some sources of variation are genetic; individuals have two copies of the gene (maternal and paternal) consisting of any combination of inactive, partially active, active or duplicated (32 copies) versions of CYP2A6. Thus individu- als can range from ultra slow (with two inactive copies) to ultra fast (with duplicated copies) nicotine metabolism. This genetic variation in rates of nicotine metabolism has been associated with variation in a number of aspects of smoking behavior (i.e. amount smoked). The genetic variation can be imitated (phenocopied) using CYP2A6 inhibitors (i.e. 8MOP) or inducers (i.e. rifampin). CYP2A6 is also under environmen- tal regulation. To investigate this we developed a non-human primate (monkey) model. We first characterized the monkey nicotine metabolic activity demonstrating that the monkey CYP2A6 enzyme was very similar to human CYP2A6 and was also responsible for nicotine metabolism to cotinine. We also used this model to demon- strate that chronic in vivo nicotine (0.3 mg/kg s.c. bid) down-regulates the monkey CYP2A6 mRNA, protein and nicotine metabolic activity. Smokers have lower rates of nicotine metabolism suggesting that nicotine down-regulates CYP2A6 leading to slower nicotine metabolism/inactivation in smokers. This and other animal models provide approaches for investigating the relative contribution of genetic and environ- ment influences on variation in nicotine metabolism and the resulting consequences for nicotine taking behavior.

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SRNT Symposia

SYM1C

EFFECTS OF METHOXSALEN ON NICOTINE’S PHARMACOLOGICAL EFFECTS AND ELIMINATION IN MICE

M. Imad Damaj, Ph.D.1,2, Edward M. Seliers, Ph.D.3, Billy R. Martin, Ph.D.3, Rachel F. Tyndale1; Virginia Commonwealth University; CAMH, University of Toronto

Initially we determined the similarity of human and mouse (male ICR) in vitro metabolism of nicotine to cotinine. The Km (mM) were 55 and 65 for human and mouse respectively, while the Ki for inhibition by methoxsalen was 0.25 mM for both species. Methoxsalen has been used to inhibit human nicotine metabolism and this was tested in vivo in mice. Male ICR mice received methoxsalen (s.c.) at different doses 15 min before treatment with nicotine (2.5 mg/kg, s.c.). The antinociceptive (tail-flick and hot-plate tests) and hypothermic effects were measured at different times after nicotine. Methoxsalen extended the duration of nicotine’s effects (180 min after nicotine injection) compared to control group (45 min) in all tests. This enhancement in nicotine’s effects was blocked by a pretreatment with mecamylamine, a nicotinic antagonists. In addition, the shift in pharmacological activity of nicotine correlated with a parallel shift/increase in nicotine plasma levels consistent with methoxsalen inhibiting nicotine metabolism in mice as we see in humans. Similar results were seen after oral administration of nicotine. We observed a 10-20 fold leftward shift in oral nicotine dose-response curves after pretreatment with a s.c. dose of 20 mg/kg of methoxsalen. These results suggest that in vivo inhibition of CYP2A enzymes by methoxsalen inhibits nicotine metabolism (including first-pass metabolism) and enhances its pharmacological effects in mice. Our studies can further aid in the development of new strategies in smoking cessation.

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SYM1D

A COMPARISON OF NICOTINE METABOLISM AMONG SPECIES

Sharon Miksys*, Ph.D., Rachel F. Tyndale, Ph.D., CAMH, University of Toronto, Canada

Variable nicotine metabolism has both genetic and environmental sources. A major strength of animal models, in addition to pharmacodynamic models, lies in their usefulness for investigating environmental sources of variation in nicotine metabolism, primarily through regulation of the nicotine-metabolizing enzymes. Nicotine consumption may vary substantially between behavioral animal models due to kinetic variation. Non-human primates are good models due to their high degree of similarity to humans in enzymatic and receptor structure and function. However, for practical reasons rodents are more often the model of choice. Rodents have been used in a variety of behavioral studies of nicotine pharmacology as well as for assessing the regulation of hepatic and brain nicotine metabolism. While the rates of metabolism in rats are similar to humans, the rat models fall short in that nicotine is metabolized to cotinine primarily by hepatic CYP2B1/2, and not by CYP2A enzymes as in humans. Mice have also been used extensively to study nicotine pharmacology especially with the advent of transgenic mouse models. The pharmacokinetics of nicotine metabolism in mice are not as well described as in rat, and the plasma half-life of nicotine is much shorter in mice than in either rat or human. However, the mouse model has the advantage that nicotine is metabolized to cotinine by CYP2A5, which shares many substrates and regulators with human CYP2A6. We will describe species pharmacokinetic and enzymatic similarities and differences. The more we learn about nicotine metabolism in these animals the better these models can be put to use for pharmacological studies as well as for the investigation of the mechanisms of individual variation in human nicotine metabolism.

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SYM2

NOVEL PERSPECTIVES ON AFFECTIVE PROCESSES AND SMOKING

Richard A. Brown, Ph.D.*, and Christopher W. Kahler, Ph.D., Brown Medical School, Robin Mermelstein, Ph.D., and Jessica Werth Cook, M.A., University of Illinois at Chicago, and Timothy B. Baker, Ph.D., University of Wisconsin-Madison

Research over the past fifteen years has generally shown smokers to exhibit higher rates of MDD and depressive symptoms than nonsmokers. To date, however, the clinical implications of these findings have been limited. This symposium offers trans-disciplinary research findings that represent new directions in the study of smoking and affective processes. Presentations focus on effects of both positive and negative affect, and their roles in the acquisition, maintenance and cessation of cigarette smoking. Presentations represent diverse perspectives (laboratory analogue, longitudinal field trial, smokers engaged in both self-quit attempt and cessation clinical trial) and populations (adult and adolescent). Dr. Mermelstein’s presentation will examine longitudinal changes in affective states preceding and following smoking among adolescents, using momentary ecological assessments. Ms. Cook’s presentation examines the hypothesis that smoking nicotinized vs. denicotinized cigarettes in the laboratory would heighten anhedonic, but not hedonic smokers’ ability to experience positive affect in response to positive mood induction. Dr. Kahler will examine the important role of trait hostility on smoking motivation and cessation outcomes from a clinical trial among smokers with past major depression. Finally, Dr. Brown will examine the role of distress tolerance to physical and psychological stressors in the laboratory and their significant relationships with early smoking lapse and subsequent relapse in a trial of adult smokers engaged in a self-quit attempt. Dr. Timothy Baker will serve as discussant for the session and will synthesize across disciplines and presentations, and will highlight implications for future research in this area.

No funding.

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SYM2A

LONGITUDINAL CHANGES IN AFFECTIVE PROMPTS AND RESPONSES TO SMOKING AMONG ADOLESCENTS

Robin Mermelstein, Ph.D.*, Donald Hedeker, Ph.D., Brian Flay, DPhil., University of Illinois at Chicago, Saul Shiftman, Ph.D., University of Pittsburgh

This paper examines longitudinal changes in affective states preceding and following smoking among adolescents. We hypothesized that adolescents who experienced greater mood benefits from smoking would be more likely to escalate compared with those who experienced fewer mood benefits. We also hypothesized that affective antecedents to smoking would be less distinguishable from random times as smoking increased. Using ecological momentary assessments, 84 adolescents (55% female; 71% white) provided subjective mood responses to smoking via handheld computers for 7-days at baseline, 6-, and 12-months. Adolescents fell into 3 groups based on longitudinal smoking patterns: escalators, quitters, and stable smokers. Random effects regression analyses controlling for gender and grade examined effects of time, group, and the time x group interactions on affective responses pre and post-smoking, and comparisons with random times. At baseline, future quitters were more likely than the other groups to smoke at times of more positive moods, but over time experienced fewer positive mood enhancements following smoking compared to the other groups. Although none of the groups experienced decreases in negative affect (sad, lonely) following quitting and neither did these feelings precede smoking, over time, smokers experienced consistent decreases in feelings of stress/frustration following smoking. Escalators showed increases in positive mood following smoking at baseline and 6 months, but a diminution of these enhancements by 12 months. These results highlight the importance of affect surrounding smoking as predicting future smoking trajectories.

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SYM2B  
ANHEDONIC SMOKERS GET HAPPIER WITH NICOTINE THAN WITHOUT; NOT SO FOR SMOKERS WITH GREATER HEDONIC CAPACITY

Jessica Werth Cook*, Bonnie Spring, Dennis McChargue, Malia Richmond, Neal Doran, Joe VanderVeen, Donald Hedeker, University of Illinois at Chicago and Hines VA Hospital

BACKGROUND: Heightened proneness to negative affect (anger, depression, anxiety) covaries with nicotine dependence. Deficient positive affect may be similarly linked, but little is known about mechanisms that bond anhedonic smokers to their cigarettes. We hypothesized that smokers with low hedonic capacity would have difficulty experiencing positive mood unless they simultaneously self-administer nicotine.

METHODS: Fifty euthymic, regular smokers (52% female) participated in two experimental trials during which positive affect (PANAS) was assessed before and after they underwent a positive mood induction (music plus autobiographical memory) while smoking either a nicotine or a denicotinized cigarette.

RESULTS: Mixed linear modeling, controlling for nicotine dependence, age, and cigarette harshness, yielded a significant interaction of hedonic capacity x condition x time (t(185)=-2.15, p = .03). Supporting the hypothesis that hedonic capacity moderates nicotine's effect on change in positive affect, simple effects analyses showed a significant condition by time interaction among smokers with lower hedonic capacity [t(92)=2.32, p = .02] but not among smokers with higher hedonic capacity [t(92)=0.48, p =.63]. Smoking nicotine versus placebo heightened anhedonic smokers' ability to be induced into a positive mood, whereas nicotine had no effect on more hedonic smokers' responsiveness to positive mood induction. Results suggest that low hedonic smokers might bolster their ability to experience positive affect by smoking during typically pleasurale events.

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SYM2C  
HOSTILITY IN SMOKERS WITH PAST MAJOR DEPRESSIVE DISORDER: RELATION TO SMOKING MOTIVES, QUITTING MOTIVES, AND CESSATION OUTCOMES

Christopher W. Kahler, Ph.D.*, Brown University Center for Alcohol and Addiction Studies; David R. Strong, Ph.D., Brown Medical School and Butler Hospital; Raymond Niaura, Ph.D., Brown Medical School and Miriam Hospital; and Richard A. Brown, Ph.D., Brown Medical School and Butler Hospital.

Research has linked trait hostility to higher rates of smoking in clinical and community samples. However, the role of hostility in motivating smoking behavior, its impact on motivations for quitting smoking, and its relation to cessation outcomes have received little empirical attention. Individuals high in hostility may smoke to compensate for deficits in managing negative affect and social relations and may have particular difficulty quitting smoking. We examined hostility in 85 participants in a clinical trial of cessation treatment for smokers with a history of major depressive disorder. Trait hostility, as indexed by the Cook-Medley Hostility Scale, was associated with greater smoking in social situations, greater expectations of being evaluated negatively by others due to smoking, and stronger extrinsic social reasons for quitting smoking. Hostility was associated significantly with a substantially lower odds of smoking abstinence after treatment with only 14.6% of those high in hostility being abstinent at 12 months posttreatment compared to 50.0% of those low in hostility. Hostility was not associated significantly with smoking to manage negative affect, nor did it predict change in negative mood during treatment. Results suggest hostility may play an important role in smoking motivation and cessation outcomes among smokers with past major depression.

Supported in part by grant DA08511 from the National Institute on Drug Abuse to Dr. Richard A. Brown.

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SYM2D  
DISTRESS TOLERANCE IN RESPONSE TO PHYSICAL AND PSYCHOLOGICAL STRESSORS: RELATIONSHIP TO SMOKING CESSION AMONG ADULT SELF-QUIETERS

Richard A. Brown, Ph.D.*, Brown Medical School/Butler Hospital, Carl W. Lejuez, Ph.D., University of Maryland, David R. Strong, Ph.D, Brown Medical School/Butler Hospital, Christopher W. Kahler, Ph.D., Brown University Center for Alcohol and Addiction Studies, Raymond Niaura, Ph.D., Brown Medical School/Miriam Hospital, Linda Carpenter, M.D., and Lawrence Price, M.D., Brown Medical School/Butler Hospital

Recent studies indicate that a large percentage of individuals attempting smoking cessation lapse to smoking within a matter of days and very few recover to achieve long-term abstinence. Current models of relapse devote insufficient attention to this phenomenon and results of studies attempting to relate severity of nicotine withdrawal symptoms to short-term cessation outcomes have been equivocal. This paper will examine the concept of distress tolerance, a biobehavioral variable theoretically linked to an underlying sensitivity to negative emotional distress. Results are presented from a study of 77 adult self-quitters followed over 28 days post-quit. At baseline, duration of persistence in physical (breath-holding and inhalation of carbon dioxide-enriched air) and psychological (computerized math) laboratory stressor tasks was recorded. Subjects above the median duration on all three tasks (high distress tolerance) had significantly higher rates of (biochemically-verified) abstinence than smokers below the median duration on all three tasks (low distress tolerance). At 7- and 28-days post quit-date, high distress tolerance subjects had 58.3 and 33.3% abstinence compared to 14.3 and 0% abstinence for low distress tolerance subjects, respectively. Implications of these findings are discussed in terms of using exposure and acceptance-based approaches in the treatment of nicotine dependence.

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SYM3  
1:30 pm - 3:00 pm  ENGAGING SCIENTISTS TO PROMOTE EVIDENCE-BASED POLICY

Brion Fox*, University of Wisconsin Comprehensive Cancer Center, Mitch Zeller, Pinney Associates, Dorothy Hutsukami, University of Minnesota, Linda Bailey, Center for Tobacco Cession, Sue Curry, University of Illinois at Chicago, Matthew Barry, Campaign for Tobacco Free Kids

Governmental and regulatory bodies have historically played a significant role in curbing the societal burden of tobacco. In the future, the importance of tobacco policy making is likely to increase with future policies addressing product regulation, cessation, smoke-free environments and other population-based interventions. To ensure that these policies are grounded in the best available evidence, scientists and scientific societies should participate in the policy making process. This symposium will focus on how SRNT members can and do influence policy. The first speaker will describe the ethical and practical issues raised when scientists participate in policy making. Then two case studies will be presented, providing views from both a policy expert and a scientist. The first case study will examine harm reduction and the inter-relationship between policy and science. The speakers will explore the central role science plays in policy making in this area, and how policy needs can establish priorities for scientific endeavors. The second case study will examine the development and dissemination of cessation strategies and how scientists interact on many different levels with policy makers both private, such as managed care organizations, and public, such as legislators and regulators. Finally, a discussant from the Campaign for Tobacco Free Kids will provide an advocate's perspective on the issues raised. The moderator will entertain questions and comments from the audience to further explore the implications of SRNT scientists becoming involved in the policy making process.

See individual abstracts.

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To counter tobacco-related death and disease in our society, we will need to have both strong science and strong tobacco control policies. This necessitates both having policies that are built upon good science and conducting science that is responsive to policy needs. Unfortunately science and policy are often seen as competing rather than complementary, which can create distance between scientists and policymakers. This distance is related to expertise and time, but it is also created by the belief that scientists who play an active role in policy development jeopardize their reputation by appearing radical. Ultimately, some scientists feel that this could prove a disservice to tobacco control. Indeed, historians have claimed that Alton Ochsner’s early findings regarding smoking and lung cancer were discounted because he was considered “an anti-smoking enthusiast.” To introduce this symposium, I will discuss the benefits and risks to scientists engaging in the policy making process and present an ethical framework for how to maintain scientific credibility while engaged in policy matters. The framework was built upon rule-based utilitarian principles. It is informed by the fact that a scientist’s primary obligations are to conduct research with high integrity and to impartially assess data. Through the framework, I will further describe a scientist’s moral obligation to disseminate their work, including to policy decision-makers. Finally, I will address how scientists can ethically address the fact that science is but one element in policy decision-making along with economic, political and normative values.

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**SYM3B**

**THE CRITICAL ROLE OF SCIENCE IN THE ESTABLISHMENT OF TOBACCO HARM REDUCTION POLICY**

Mitchell Zeller*, J.D., Pinney Associates, Dorothy K. Hatsukami*, Ph.D., University of Minnesota, Tobacco Use Research Center

There is a new generation of tobacco-based products in the marketplace today that purport to reduce the exposure to and risk from tobacco. There is little independent scientific evidence to evaluate these products and claims. This makes it difficult for health professionals to provide advice about these products to tobacco users who have health concerns. It is also difficult to evaluate whether any of these products genuinely reduce risk, or are just a more sophisticated version of the “light” cigarette. Few scientists have participated in this important debate. This portion of the symposium will examine the critical role scientists must play in informing policy making in the area of tobacco harm reduction. Current examples of products making exposure and harm reduction claims will be described, along with how scientists and policymakers can work together to evaluate these products. A discussion of how studies examining reduced exposure products can or should be conducted to inform policy will also be provided. Results on reduced exposure smokeless tobacco and modified cigarettes will be used as an example. Finally, a set of principles to guide science-based regulatory policy in this area will be reviewed. These principles can inform regulatory agencies when evaluating claims to reduce exposure and risk.

Mitchell Zeller provides consulting services regarding treatments for tobacco dependence to GlaxoSmithKline Consumer Health Care through Pinney Associates. Dorothy Hatsukami is funded by NCI Grant P-50 DA 13333.

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**SYM3C**

**THE CRITICAL ROLE OF ADVOCACY IN GAINING COVERAGE FOR TOBACCO CESSATION SERVICES**

Linda A. Bailey*, J.D., M.H.S., Director, Center for Tobacco Cessation, Susan J. Curry*, Ph.D., Director, Health Research and Policy Centers, University of Illinois at Chicago

During the past decade, researchers have published scientific findings that show the benefit of tobacco cessation services, the costs associated with these services, and the return on investment for payers and providers of these services. Studies within the health care setting have documented successful approaches to integrating the delivery of cessation services into standard medical care. This portion of the symposium will examine the progress that has been made in gaining coverage for tobacco cessation services and the critical role that advocates must play in expanding coverage for these services in both public and private health care plans. Examples of current advocacy activities to expand coverage for Medicaid beneficiaries will be described, and ways in which researchers and advocates can work together to translate the research for policymakers and increase the likelihood that policies will be science-based will be discussed. Finally, some lessons learned about how to better engage advocates in effort to expand coverage for tobacco cessation services will be presented.


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**SYM3D**

**VIEWS OF A TOBACCO CONTROL ADVOCATE ON ENGAGING SCIENTISTS TO PROMOTE EVIDENCE-BASED POLICY**

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

This portion of the symposium will consist of comments from a member of a leading tobacco control advocacy organization, the Campaign for Tobacco Free Kids. The discussant will make observations on the two case studies presented, noting how in the case of harm reduction, it has largely been the advocacy community pushing the scientific community for greater involvement in the policy process (along with more research into the issue). This stands in contrast to the case of cessation in which it is the scientific community that is pushing the advocates to understand and embrace and take action on behalf of cessation. Finally, the discussant will address how the issues of policy and science blend with advocacy and can support policy changes in the private sector as well as at international, national, state and local levels of government.

The Campaign for Tobacco Free Kids is primarily funded by the Robert Wood Johnson Foundation, the American Cancer Society, and American Heart Association.

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SYM4A

**NICOTINE MEDIATED ALTERATIONS IN STRESS RESPONSIVE SYSTEMS**

Esther Sabban*, Lidia Serova, Charles Stier, Shu-Yuan Cheng, Dina Glazkova, Gagan Singh

The relationship between nicotine and stress is complex and paradoxical. Although nicotine can provide a temporary relaxation, chronic smoking appears to relax some of the effects observed with stress, including increased release and synthesis of the catecholamines (CA) and their biosynthetic enzymes. We examined the effect of short- and long-term administration of nicotine on gene expression of CA biosynthetic enzymes in adenral medulla, sympathetic ganglia, and on dopaminergic and noradrenergic brain areas. Short term administration by injections led to omega increase in mRNA for CA biosynthetic enzymes in areas studied and increased plasma cortisol. In the brain, the induction of CA-biosynthetic enzymes in the brain was observed at lower doses than in the adrenal medulla, and appears to involve the alpha 7 nACHR subtype. In contrast, infusion of nicotine by osmotic pumps for 14 days did not alter plasma cortisol or aldosterone levels nor gene expression of CA biosynthetic enzymes tyrosine hydroxylase (TH) and dopamine beta-hydroxylase (DBH) (except for TH mRNA in locus coeruleus). Therefore we examined how it might modulate the response to several stressors. Rats infused with nicotine or saline for 14 days were subjected to immobilization, cold or restraint stress. Our results reveal nicotine reduced some of these responses to stress. The stress-triggered elevation of DBH gene expression was especially sensitive to prior administration of nicotine. In addition, rise of plasma levels of aldosterone in response to stress was reduced in the nicotine pretreated animals. The results indicate the threshold to stress can be altered by prior exposure to nicotine.

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SYM4B

**NEUROBEHAVIORAL PROFILES IN ADULT RATS EXPOSED TO NICOTINE DURING ADOLESCENCE**

Craig J. Slawecki*

The 1998 National Household Survey on Drug Abuse reported that roughly 20% of teens between 12-17 years old currently use nicotine. This early use of nicotine is a serious concern because increased risk for dependence and poorer prognosis for cessation is associated with early life initiation of nicotine use. This poor prognosis associated with adolescent initiation may be in part related to unique effects of nicotine on the developing adolescent brain. That is, adolescents may be uniquely susceptible to the long-term behavioral and neurophysiological consequences of nicotine exposure. Based on this hypothesis, it could be speculated that initiating nicotine use during adolescence may predispose an individual to enhanced cognitive deficits or impaired mood state into adulthood. To explore this hypothesis, the neurobehavioral profiles of adult rats exposed to nicotine as adolescents have been characterized. For nicotine exposure, transdermal nicotine patches have been utilized as a non-invasive nicotine delivery system. The data described in this presentation will demonstrate the utility of the transdermal nicotine administration procedure in the adolescent rat. Furthermore, it will be shown that a brief 5 day exposure to nicotine produces a neurobehavioral profile indicative of enhanced anxiety-like behavior and neurophysiological hyperarousal which persists into adulthood. Lastly, preliminary evidence for the potential involvement of altered responsivity of central nicotinic and corticopin-releasing factor systems in adult rats exposed to nicotine during adolescence will be presented. Taken together, these findings add to a growing literature which demonstrates that the adolescent is highly susceptible to nicotine's protracted effects.

Supported by 10RT-0334 from the State of California Tobacco Related Disease Research Program.

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SYM4C

**INTEGRATION OF CNS STRESS RESPONSES TO SYSTEMIC NICOTINE**

Shannon G. Matta*

This presentation will focus on the integration of neuroendocrine, autonomic, and behavioral responses to systemic nicotine. Our neuroendocrine investigations focus on the role of nicotine acting on both the classical hypothalmo-pituitary-adrenal (HPA) axis and the extra-hypothalamic regions modifying this axis (e.g., amygdala, hippocampus). Catecholaminergic regions projecting to these forebrain structures comprise a second area of emphasis. In vivo microdialysis studies measure secretion of norepinephrine and dopamine in specific brain regions in response to nicotine, other agonists, and antagonists. These neuropharmacologic studies are integrated with neuroanatomic methods to identify the pathways affected by nicotine and to characterize the specific nicotinic cholinergic receptor subtypes involved, both at pre- and post-synaptic sites. Finally, we have integrated these neurochemical analyses with our behavioral animal (rat) model of nicotine self-administration, in which nicotine exposure more closely approximates human nicotine consumption - i.e., intake is truly chronic, intermittent and motivated. In this model, noradrenergic responsiveness to nicotine and foot-shock stress decreases over time, and preliminary studies indicate altered levels of stress-responsive neuropeptide mRNAs in the hypothalamus. These studies provide a mechanistic basis for understanding the effect(s) of chronically self-administered nicotine on stress-responsive CNS systems.

*Funded by DA03977 and DA015525.

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SYM4D

PHARMACOKINETICS AND PHARMACODYNAMICS OF NICOTINE-STRESS RELATIONSHIP

Neil E. Grunberg*

It is well-documented that stress increases tobacco use, and it has been inferred that tobacco use decreases stress. These interesting relationships contribute to the marvel of the actions and legends associated with tobacco use, and have led to countless psychological, social, and biological speculations to explain these relationships. Fortunately, empirical evidence is available that may help to explain the stress-tobacco and stress-nicotine relationships. This talk will present a series of laboratory investigations of actions of nicotine in rats and monkeys under various conditions of stress that were designed to address clinically-relevant questions related to stress and tobacco use. These experiments indicate that stress alters nicotine pharmacokinetic and pharmacodynamic. More specifically, stress alters the distribution of nicotine throughout the body and into the brain. Stress also increases the rate of elimination of nicotine from the body. Further stress alters biobehavioral actions of nicotine in ways that are consistent with increased self-administration of nicotine-containing products under stress. Generally, nicotine does not reduce stress, but there are some specific stress-reducing actions that depend on animal strain, gender, and housing conditions. Interestingly, the stressors may be physical, social, or environmental. In addition to reviewing relevant animal studies, this talk will present new data that reveal how nicotine’s actions are altered when environmental influences may reduce stress. Overall, this presentation is intended to lay out explanations for the stress-nicotine relationship and to suggest ways that environmental manipulation, relevant to stress, may help to prevent tobacco self-administration.

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SYM5

SMOKING CESSATION PHARMACOGENETICS


Substantial progress has been made in the last few years regarding our understanding of the genetic determinants of smoking behavior, with an increasing number of behavioral and molecular genetic studies adding to the growing corpus of data that inform this understanding. The number of studies that have investigated response to pharmacological interventions for smoking cessation as a function of genotype, however, remains limited. This symposium will bring together leading international experts in the field of smoking cessation pharmacogenetics to present the latest data on the effect of genotype on response to pharmacological smoking cessation interventions. Dr. Niaura will begin by reviewing new evidence for the role of genetic factors in smoking initiation. Dr. Lerman will then report data on genetic predictors of cessation outcome in an open-label clinical trial of transdermal nicotine. Dr. Swan will report data from a study conducted as part of an open-label, randomized trial of bupropion SR in combination with counseling. Finally, Dr. Walton will report data on a previously undescribed gene (ANKRD4) in relation to transdermal nicotine efficacy. The symposium will conclude with a discussion of future directions for smoking cessation pharmacogenetics and the need for international collaboration if future studies are to be adequately powered to enable the role of gene x environment and gene x gene interactions to be investigated.

This research was supported by TTURC grant CA84719 from NCI (Niaura et al.), TTURC grant P5084718 from NCI, NIDA and RWJ (Lerman et al.), NCI grant CA71338 and the Group Health Cooperative Pharmacy (Swan et al.) and Cancer Research UK (Walton et al.).

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SYM5A

HERITABILITY OF SMOKING INTENSITY AMONG ADOLESCENTS ESTIMATED WITH A FULLY INFORMATIVE GENETIC SAMPLE

Raymond Niaura, Ph.D.*, Jeanne McCaffery, Ph.D., George Papandonatos, Ph.D., Elizabeth Richardson, Ph.D., Brown School of Medicine

Conventional wisdom holds that smoking initiation in youth is influenced primarily by shared and unique environmental factors, whereas progression to sustained tobacco use and dependence in adulthood is thought to be influenced to a larger degree by genetic factors. Heritability of smoking, however, has not been examined extensively among adolescents, and when it has, crude measures of ever or current smoking have been examined. We explored the heritability of a more complex phenotype of smoking intensity in a subset of sib pairs drawn from the National Longitudinal Study of Adolescent Health (ADDHEALTH) high school student sample. Pairs included monozygotic (MZ; n=257) and dizygotic (DZ; n=400) twins, full sibs (FS; n=964), half sibs (HS; n=305), cousins (CO; n=113), and non-related adolescents living in the same household (NR; n=259). Smoking intensity was categorized as: never smokers, experimental smokers, intermittent smokers, and established smokers. The mean age of the sample was 16 years, half were female, and 40%- were non-white mixed ethnicity. The pattern of significant polygenic correlations suggested a genetic influence: MZr=0.64; DZr=0.43; FSrs=0.39; HSrs=0.3; COrs=0.22; NRrs=0.39. Biometric modeling using the MX statistical package revealed significant estimates for additive genetic (35%), shared environmental (25%) and unique environmental (40%) effects. Smoking intensity appears to be heritable in high school adolescents, but one should not ignore the role of unique environmental factors. Both should be addressed in prevention and treatment efforts.

This research was supported by TTURC grant CA84719 from NCI.

SYM5B

PHARMACOGENETIC INVESTIGATION OF NICOTINE REPLACEMENT THERAPIES

Caryn Lerman, Ph.D.*, University of Pennsylvania, Peter G. Shields, Ph.D., Alexandra Shields, Ph.D., Georgetown University, Margaret R. Rukstalis, M.D., University of Pennsylvania, Rachel F. Tyndale, Ph.D., University of Toronto, Neal Benowitz, M.D., University of California at San Francisco, Wade H. Berrettini, M.D., University of Pennsylvania

The emerging field of pharmacogenetics has the potential to advance the science of tobacco dependence treatment by generating new knowledge about genetic factors that influence clinical treatment outcome. This presentation will review genetic predictors of treatment outcome in an open-label clinical trial of transdermal nicotine (TN) vs nicotine nasal spray (NS) (n=913 smokers of European ancestry). Preliminary data support the role of the DRD2_141 Ins/C variant in response to nicotine therapy, as well as a differential response to TN vs NS based upon COMT genotype. In addition to these findings, we will describe the results of analyses of SNPs in neuronal nicotinic receptor genes, as well as analyses of genetic variation in nicotine metabolizing enzymes, and other relevant neurobiological pathways. A variety of phenotypes will be explored, including abstinence, lapse and recovery events, and quit trajectories. Data relevant to mediating psychological and biological mechanisms of genetic effects will also be presented. The presentation will end with a brief discussion of future directions for pharmacogenetic research on tobacco dependence treatment, including new data on emerging health care policy issues.

This research was supported by TTURC grant P5084718 from NCI, NIDA and RWJ.

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SYM5C  
CANDIDATE GENES ASSOCIATED WITH NICOTINE DEPENDENCE AND SMOKING CESSATION FOLLOWING TREATMENT WITH BUPROPION SR AND COUNSELING


This study was conducted as part of an open-label, randomized trial involving 1,524 participants randomly assigned to receive 150mg or 300mg bupropion SR in combination with either minimal or moderate intensity counseling in a large health care system. Participants were assessed for pretreatment nicotine dependence and completed follow-up surveys three and 12 month from quit date to determine seven-day point prevalence of smoking, abstinence and adverse effects, and adherence to treatment regimen. 993 12-month responders agreed to be sent materials to collect buccal cell samples; of these, 496 provided samples sufficient for DNA analysis using the Taqman assay. DNA was genotyped for candidate genes in the dopaminergic (DRD2 [Taq1A], DAT1 [3’ VNTR]) and nicotinic cholinergic (CHRNA2 [Intron 5 G/T], CHRNA4 [silent change in exon 5 G/T], CHRNA7 [silent change in exon 4 G/A]) pathways. Variation in DAT1 and DRD2 was associated with a pretreatment measure of dependence while no candidate genes were associated with abstinence effects. Variation in CHRNA2 was associated with number of side effects and a possible genotype * gender interaction was observed. Variation in DRD2 and DAT1 was associated with the level of adherence to the medication regimen and the likelihood of nonsmoking at follow-up (all main effects, p < .05). These results provide preliminary evidence of the role that genetic variation may play in key points along the therapeutic pathway following pharmacological treatment for smoking cessation.

This research was supported by NCI grant CA71358 and the Group Health Cooperative Pharmacy.

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SYM5D  
DRD2: THE GENE FOR NICOTINE DEPENDENCE?


It is now ten years since publication of the first study showing a link between the DRD2 Taq1A genetic variant and tobacco consumption. This marker was thought to lie within the gene encoding the dopamine D2 receptor and subsequently found to identify people with reduced numbers of dopamine receptors. One action of nicotine is to increase dopamine release in the brain, thus people with this particular variant might be more likely to become dependent on tobacco. Our group has shown that people with this variant gene are more responsive to nicotine replacement therapy for smoking cessation. Data will be presented showing that the DRD2 Taq1A variant lies outside DRD2 in a previously undescribed gene (ANKRD4). A comparison using genetic markers in DRD2 and ANKRD4 suggests that effects on smoking cessation are more marked in ANKRD4.

This research was supported by Cancer Research UK.

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SYM6  
WEB-ASSISTED TOBACCO INTERVENTIONS (WATI): POTENTIAL, PROMOTION AND PITFALLS

Peter Selby, M.D.*, Centre for Addiction and Mental Health and University of Toronto, Scott McIntosh, Ph.D., University of Rochester, Beth Bock, Ph.D., Amanda L. Graham, Ph.D., Brown University and Miriam Hospital, Suzy McDonald, Health Canada

Approximately, 70% of adult North Americans have Internet access with health being the number one topic area for site visits. There are numerous smoking cessation web sites available to the public with unknown quality but potentially high reach. In addition to evaluating new applications of evidence-based interventions from other media (such as self-help manuals, telephone quit lines, and physician advice), novel interventions possible and feasible with the Internet need to be evaluated for efficacy (such as web-chatting, automated self-directed searches, and applications using artificial intelligence). The effects of novel ways to present such cessation content, and the effects of the medium itself (navigation issues, speed of delivery, evolving features, etc.) need to be measured. As with phone lines, recruitment strategies need to be developed to “drive traffic” to these sites. This symposium will present work from several perspectives, including reach, recruitment, quality and usability of websites, and preferences of teens for website design in both the US and Canada. In addition to the individual presentations, the chair of the symposium will provide a brief overview of the proceedings from the “Web-assisted Tobacco Intervention (WATI) Workshop: toward better practices” which will be held in Toronto on January 12th, 2004. The Discussant will provide an overview of web-assisted interventions, providing an international perspective, and comment on the four presentations. Recommendations for future research will also be discussed.

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SYM6A  
HEALTH CANADA’S INTERACTIVE WEBSITE: REACH, USE AND RESULTS

Suzy McDonald*, Diane Fournier, Tobacco Control Programme, Health Canada

In January 2003, Health Canada greatly expanded and enhanced its Web site to provide Canadians of all ages with a comprehensive, one-stop online resource, as part of a new national cessation campaign. This innovative site provides access to an interactive, self-help cessation tool based on the stages of change (pre-contemplation, contemplation, preparation, action, maintenance); a personal profile questionnaire to help smokers understand their smoking habits (motives, level of addiction, routines and triggers) and a 30-day series of e-Quit messages to motivate and support smokers through the quitting process, one day at a time. As a result of this initiative, web traffic increased by more than 19% in one month (175% increase from the same period in the previous year). Initial results indicate that the website is reaching a wide range of smokers. Of the 10,324 smokers who filled out a personal profile from February to March 2003, 56.43% were female, 30.53% were between the ages of 20-25 and 39.69% were between the ages of 36-50. Of these users, 76.33% smoked 10 or more cigarettes daily, 80.6% smoked within a half hour of waking up and 68.72% wanted to quit within the next month. Preliminary survey results from the interactive website demonstrate that daily support messages (e-Quit messages) appear to have increased quit rates among users. Among the e-Quit subscribers who finished the 30-day program (11 886), a total of 1299 filled out a survey, thus indicating a self-reported quit rate of 10.9%.


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inter-rater reliability (kappa) was >.77 for all items (range .77 to .93). Of the 202 websites excluded from analyses. Usability testing on the remaining websites was computed for all items on the assessment instrument. The overall usability of websites identified via search engines, 77% (n=156) did not provide direct treatment cessation. Most websites received high ratings in areas related to guidelines covering four aspects of usability: Design, Reading, Navigation, and Accessibility. Most websites failed to utilize the full functionality of Internet such as interactivity and tailored messaging capabilities to deliver comprehensive treatment. Only 11% of smoking cessation websites offered interactive features. If the Internet is to help accelerate the reduction in population prevalence of smoking, it must include the best evidence-based research practices. Currently, the majority of Internet smoking cessation treatment options fall short of this ideal.

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**SYM6C**

**ASSESSING USABILITY OF SMOKING CESSATION TREATMENTS ON THE INTERNET**

Amanda L. Graham, Ph.D., Beth Bock, Ph.D., Christopher N. Sciamanna, M.D., M.P.H., Centers for Behavioral and Preventive Medicine, Brown Medical School & The Miriam Hospital.

The Internet may be a viable channel to reach and treat smokers who are unlikely to use other modes of intervention. However, the quality and usability of existing websites are extremely variable. Usability is the measure of the quality of a user's experience when interacting with a system regardless of technology type. A usable website is accessible, appealing, consistent, clear, simple, and navigable. The purpose of this study was to examine the degree to which smoking cessation websites adhere to national guidelines regarding usability. We developed a self-report measure of website usability using guidelines from the National Cancer Institute. The guidelines cover four aspects of usability: Design, Reading, Navigation, and Accessibility. Two independent reviews of each website were conducted and inter-rater reliability was computed for all items on the assessment instrument. The overall inter-rater reliability (kappa) was >.77 for all items (range .77 to .93). Of the 202 websites identified via search engines, 77% (n=156) did not provide direct treatment and were excluded from analyses. Usability testing on the 46 remaining websites showed mixed results. Most websites received high ratings in areas related to website design and organization. Features related to reading and scanning were generally user-friendly (e.g., use of clear headings for topical areas and low to moderate text density). However, reading levels were high, averaging at the eighth grade reading level (> 25% above 12th grade reading level). Ratings were less favorable regarding site navigation and accessibility (80% of sites available only in English). Additional data will be presented regarding usability testing with current smokers and comparability with expert ratings.

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**SYM7**

**PRENATAL SMOKING EXPOSURE AND OFFSPRING NEUROBEHAVIOR ACROSS DEVELOPMENT: INSIGHTS FROM ANIMALS AND HUMANS**

Lauralee Stroud, Ph.D.*, and Raymond Niaura, Ph.D., Brown Medical School, Theodore Slotkin, Ph.D., Duke University Medical Center, Frances Leslie, Ph.D., University of California Irvine, Marie Cornelius, Ph.D., University of Pittsburgh School of Medicine

Prenatal smoking exposure is associated with numerous adverse outcomes in human offspring, including SIDS, antisocial behavior, attention deficits, and smoking uptake. Parallel work on prenatal nicotine exposure in rats has elucidated potential mechanisms underlying these effects, including abnormalities in neural cell proliferation and differentiation, and dysregulation of cholinergic and catecholaminergic systems. The objective of this symposium is to synthesize the latest preclinical and human research in this area and to highlight patterns of effects across species across development. Periods of (peri)adolescence and infancy will be a focus. Dr. Slotkin will describe effects of prenatal nicotine on rat development, from effects on developing neural pathways in fetuses and infants to novel effects on response to nicotine in adolescent rats. Paralleling preclinical findings, Dr. Cornelius will critically review effects of prenatal smoking on neurobehavioral outcomes in humans across development. She will conclude with recently emerging effects on adolescent neurobehavior. Dr. Leslie will discuss the role of nicotinic receptors in regulating central noradrenergic systems over rat brain development. She will show an increased sensitivity of these systems to nicotine very early in development. Paralleling effects on early development in animals, Dr. Stroud will examine effects of prenatal smoking on early development in humans, showing different patterns of neurobehavior and stress responses in fetuses, newborns, and infants. Dr. Niaura will synthesize across species and development, relating findings to interventions and health policy.

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DISCUSSANT: ISSUES AND IMPLICATIONS

Raymond Niaura, Ph.D., Brown Medical School

Dr. Niaura will synthesize across the presented animal and human research, discussing methodological and conceptual issues in the field, and highlighting patterns of effects over development. In particular, Dr. Niaura will focus on the periods of infancy and adolescence, examining evidence for symptoms of withdrawal in infancy, and underscoring adolescence as a period of unique vulnerability to the emergence of delayed effects of prenatal nicotine exposure. Dr. Niaura will then discuss clinical and health policy implications, comparing effects of smoking to those of other drugs of abuse during pregnancy and highlighting important directions for future research in this area. Dr. Niaura will also moderate questions and discussion from the audience.

SYM7A

NICOTINE IS A DEVELOPMENTAL NEUROTOXICANT

Theodore A. Slotkin, Ph.D.*, Duke University Medical Center

Tobacco use in pregnancy leads to higher rates of perinatal morbidity/mortality and SIDS, and persistent deficits in learning and behavior. Animal models and in particular, nicotine infusions paradigms that, like the nicotine transdermal patch, produce nicotine exposure without the confounds of other components of tobacco or episodic hypoxic-ischemic insult, have demonstrated conclusively that nicotine is a neurotoxicant to rat and human fetal brain development. Nicotine targets specific neurotransmitter receptors in the fetal brain, eliciting abnormalities of cell proliferation and differentiation and attendant shortfalls in the number of cells and eventually in synaptic activity. Because of the close regulatory association of cholinergic and catecholaminergic systems, adverse effects of nicotine involve multiple transmitter path ways and influence not only the immediate developmental events in fetal brain, but also the eventual programming of synaptic competence and plasticity. Accordingly, behavioral or physiological defects may appear after a prolonged period of apparent normality. Comparable alterations in the competence of peripheral autonomic systems can be demonstrated in animal models of nicotine exposure that entail mechanisms thought to operate in SIDS; the same defects are present in babies born to smoking mothers. These results indicate that there is a mechanistic connection between prenatal nicotine exposure, fetal brain damage, and autonomic imbalances that can lead to SIDS. Brain development continues into adolescence, the period when smoking typically commences. Adolescence is also a vulnerable period for nicotine's neurotoxicant actions, and in this case, our animal models indicate preferential neurotoxicant actions in females, which matches the gender selectivity for onset of nicotine dependence in adolescent smokers. Developmental neurotoxicity is thus likely to contribute to lasting effects of exposures ranging from fetus to adolescent.

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SYM7B

EFFECTS OF PRENATAL TOBACCO EXPOSURE OVERVIEW AND RECENT FINDINGS FROM PITTSBURGH COHORT STUDIES

Marie D. Cornelius*, Ph.D., Nancy L. Day, Ph.D., University of Pittsburgh School of Medicine

A wide range of detrimental effects relate to prenatal tobacco exposure (PTE), including decreased growth, impaired auditory orientation and autonomic regulation, and increased tremors and startles in infancy. In childhood, delays in language development and lower IQ scores and during adolescence lower overall intelligence have been reported. Deficits in verbal ability and receptive language were found in two cohorts representing middle and lower SES populations. PTE affects activity, attention, and impulsivity in the offspring. Other reported behavioral outcomes include aggressive behavior in younger children, delinquent behavior in adolescents, and criminal behavior in adults. There is also an increased risk of tobacco use among adolescents who were exposed prenatally. These deficits in growth, cognition, and behavior remain after controlling for other prenatal substances, demographic, environmental, child, and maternal characteristics. Many underlying mechanisms of these effects are demonstrated in animal models. The Maternal Health Practices and Child Development Program (MHPCD) in Pittsburgh studies the effects of prenatal substance exposure in three large cohorts of women and their children. Offspring have been followed from gestation up to early adulthood. This presentation will provide an overview of the effects of PTE and an update on the findings from the MHPCD Studies on the long-term PTE effects on growth, cognitive, and neurobehavioral outcomes. These outcomes include: 1) increased BMI and being overweight in 10-year-old offspring; 2) deficits in verbal learning and increased perseverative responses in 14-year-old offspring; 3) increased externalizing and delinquent behaviors in 14-year-old offspring; 4) increased nicotine sensitivity among 14-year-old early smokers.

MHPCD studies are supported by NIDA09275 - Cornelius & NICHD36890 - Day & Cornelius.

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SYM7C

DEVELOPMENTAL REGULATION OF CENTRAL CATECHOLAMINE NEURONS BY NICOTINIC ACETYLCHOLINE RECEPTORS

Frances M. Leslie, Ph.D.*, Department of Pharmacology and Transdisciplinary Tobacco Use Research Center, University of California Irvine

Noradrenergic neurons within the brain have important roles in regulation of arousal, attention, cardiovascular, respiratory and neuroendocrine functions. The noradrenergic nucleus, locus coeruleus, is also critically involved in neonatal olfactory learning that is essential for infant-maternal attachment. These neural systems mature early in brain development, and have been implicated in neurotrophic support of target regions. Using quantitative autoradiographic techniques, we have demonstrated that nicotinic acetylcholine receptors (nAChRs) are expressed at high levels within noradrenergic neurons of rat brain by mid-gestation. Following birth, there is a change in subunit expression within noradrenergic neurons, consistent with a change in receptor properties. Using in vitro neurotransmitter release as a functional endpoint, we demonstrate that excitation of nAChRs are localized on noradrenergic terminals in neocortex, hippocampus, hypothalamus and cerebellum during the prenatal period. In all regions, with the exception of hippocampus, there is a change in receptor properties and a decrease in nicotine-induced norepinephrine release during the first postnatal week. Using a continuous infusion model, we demonstrate that gestational exposure to nicotine, at doses equivalent to plasma levels produced by smoking, produces long-lasting changes in nicotine-induced norepinephrine release within somatosensory cortex. These data suggest that nAChRs may have a significant role in modulating afferent noradrenergic transmission during early brain development, and suggest a mechanism by which early nicotine exposure may lead to ontogenic abnormalities attributable to smoking. The physiological and clinical implications of these findings will be discussed.

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SYM7D

PRENATAL SMOKING EXPOSURE, NEUROBEHAVIOR, AND STRESS RESPONSES IN FETUSES AND NEONATES

Laura Stroud, Ph.D.*, Barry Lester, Ph.D., Raymond Niaura, Ph.D., Linda Lagasse, Ph.D., Karen Law, B.A., Monica Bocanegra, B.A., Brown Medical School

Although preclinical studies have shown effects of prenatal nicotine on early development of neurobehavioral and neuroendocrine systems, little research has examined effects of prenatal smoking on these systems in human infants. We present data from three studies examining effects of prenatal smoking exposure on neuro-behavior and neuroendocrine functioning across fetal and neonatal periods. In Study 1, we examined effects of prenatal smoking on fetal behavior. Smoking exposed fetuses showed more head, limb, and total movements compared to unexposed fetuses. Study 2 investigated neurobehavioral and adrenocortical responses to the NICU Network Neurobehavioral Scale (NNNS) in 24-48 hour old newborns. Consistent with preclinical research, smoking exposed infants were more excitable, hypertonic, and required more handling than unexposed infants. They also exhibited elevations across the NNNS stress-abstinence (withdrawal) scale, and showed higher baseline cortisol levels but attenuated responses to the NNNS compared to unexposed infants. Study 3 was designed to distinguish acute effects of nicotine or withdrawal from more persistent changes in neurobehavior and neuroendocrine systems in infants aged 10-30 days. In preliminary analyses, different patterns of effects emerged. Exposed infants showed greater difficulty in self-regulation and lower quality of movement, but few signs of stress abstinence/withdrawal. They also showed attenuated baseline cortisol, but higher responses to the NNNS. Thus, effects of prenatal smoking exposure may differ over fetal and neonatal development, possibly related to acute effects of nicotine and nicotine withdrawal versus more persistent effects on developing brain systems. Implications and links to animal studies will be discussed.

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SYM8A

EPILOGOLOGY OF “HARDCORE” SMOKING: THE NEED TO ADVANCE THE FIELD

Gary A. Giovino*, Ph.D., Roswell Park Cancer Institute, Buffalo, New York

Although multiple levels of analysis are needed, a key feature to furthering our understanding of “hardcore” smokers is to examine patterns of smoking and associated behaviors on a population level. This presentation will provide an epidemiological perspective of hardcore smokers based on data from a wide variety of sources. Existing epidemiologic surveillance provides population-based estimates of trends in selected indicators of hardcore smoking. National Health Interview Survey (NHIS) data regarding the number of cigarettes smoked each day provide a fundamental population level measure of nicotine dependence among current smokers across demographic variables (e.g. education level) since 1966. NHIS and Current Population Survey data reveal changing patterns of daily and occasional smoking, both at the national and state level. In addition, adult trends in binge drinking and marijuana use according to smoking status from the National Household Survey on Drug Abuse, as well as similar co-morbidities among adolescents from Monitoring the Future, will be presented. The current literature on population based surveys from California and the United Kingdom will be summarized. In addition, preliminary analyses from a recent national survey of smokers examines numerous correlates of hardcore smoking including motivation, dependence, quitting experiences, and interest in quitting. Converging information from population-based datasets illuminates patterns lost in more micro-level analyses and may be critical for developing strategies to increase individual cessation success.

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SYM8B

A PSYCHOLOGICAL/CONTEXTUALISTIC FRAMEWORK FOR DEFINING CATEGORIES OF SMOKERS AT RISK FOR CESSATION FAILURE

Erik Augustson*, Ph.D., M.P.H. (SAIC/NCI), Glen Morgan, Ph.D., Stephen Marcus, Ph.D., Scott Leischow, Ph.D. (NCI)

The general implication of the term “hardcore” is that some smokers are likely to never achieve successful smoking cessation. Even if such individuals are only a small proportion of current smokers, they are at risk for serious health problems and could represent a significant public health burden. Accurate identification of hardcore smokers and the elements which contribute to their sustained smoking behavior has not been effectively accomplished within the literature. A complete understanding of why some smokers are at greater risk for not achieving cessation will require integrating a wide variety of biosocial factors including social, genetic, physiological, and psychological. In the absence of such integration, and clear biomarkers of underlying physiological determinates, psychological/environment variables offer the most solid foundation for defining categories of smokers. This paper reviews key psychological factors which might be considered including smoking history, current smoking patterns, and quit history with an emphasis on the importance of understanding smoking as a behavior occurring within specific contexts. It is argued that the most promise for impacting quitting behavior and cessation success lies in adequately identifying and changing the context in which the smoking occurs. Data from TUS-CPS and NHANES will illustrate points presented. Based on a consideration of general contextual factors associated with quit attempts, an alternative nomenclature will be suggested for classifying smokers at significant risk for cessation difficulties.

National Cancer Institute.

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SYM8C  HARDCORE SMOKERS: MULTIDIMENSIONAL MODELS, STRATEGIES, AND ISSUES


Definition of the “hardcore” smoker begins with the assumption that nicotine dependence is a complex genetic trait. As such, interactions are likely to occur among gene variants in relevant biological pathways, and among gene variants and environmental risk factors. These same gene variants and interactions may contribute to other dependencies and/or comorbidities. The purpose of this presentation will be to utilize a multifactorial framework to present both a static model of relevant domains that may converge to define the hardcore smoker, as well as a developmental model to identify key milestones and trajectories that may offer opportunities to define the hardcore smoker prior to the point at which “hardening” may occur. Examples of current strategies to characterize heterogeneity in smokers at both the phenotypic and genotypic levels will be presented based on data from studies employing a variety of methodological approaches. From these studies, a number of hypotheses emerge. The hardcore smoker most likely will: 1) be characterized by multiple risk factors across psychological, genetic, and environmental domains; 2) be especially vulnerable to the effects of interactions within domains (e.g., interactions between drug metabolism and receptor genes); 3) will exhibit different manifestations of "hardening" over the developmental course that may reflect individual differences in the maturation of metabolic and receptor pathways; and, 4) will have heightened sensitivity to interactions among environmental and genetic risk factors. This presentation closes with a discussion of the methodological refinements necessary to fully characterize the hardcore smoker.

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SYM9A  APPLICATIONS OF NRT TO HARM REDUCTION

“Saul Shiffman, Ph.D., University of Pittsburgh & Pinney Associates

Some approaches to reducing tobacco harm use nicotine replacement therapy (NRT) medications. We outline several different NRT applications, including long-term maintenance, relapse prevention, situational substitution, and smoking reduction, focusing on the last. NRT is expected to help reduce smoking through the mechanism of nicotine regulation, whereby NRT provides some of the nicotine normally obtained through tobacco use. Current NRT products were designed for smoking cessation, and may not be equally applicable for reduction or substitution. Novel NRT products such as a pulmonary nicotine inhaler may prove more suitable for harm-reduction purposes. Regardless of efficacy, introducing smoking reduction as an option raises several significant issues, such as which smokers would be targeted with smoking reduction messages and whether offering reduction might divert smokers from quitting, by providing a “safe haven” for continued smoking.

The author provides consulting exclusively to GlaxoSmithKline, and has an interest in a new smoking cessation medication.

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SYM9B  A REVIEW OF TREATMENT-INDUCED SMOKING REDUCTION IN SMOKERS NOT TRYING TO QUIT

John R. Hughes*, University of Vermont

One major question about smoking reduction is whether smokers who are not currently trying to quit can substantially reduce the number of cigs/day they smoke and maintain this over time. Across the 23 existing trials of interventions for smoking reduction, the median reduction in cigs/day at 6 mo follow-up was -38%. A median of 23% of smokers reported a reduction of > 50% at follow-up. The median odds ratio (OR) for the seven placebo-controlled trials of NRT (all ORs were > 1.5) was 2.4. A second question is whether smokers will compensate by smoking remaining cigarettes more intensely. In the 12 studies that included biomarkers (mostly CO), biomarkers dropped only 68% as much as cigs/day. However, the reduction in biomarker levels (-27%) was still substantial. Active NRT and placebo produced similar compensation in the one study reporting biomarkers in both groups. A third question is whether reduction would increase or decrease motivation to quit. In 13 of the 14 studies that reported abstinence rates, abstinence was greater in the group that had more reduction. In addition, the two direct tests of reduction vs motivational treatment found reduction increased later cessation as much as motivational treatment. In summary, many smokers can reduce their smoking and maintain reductions. NRT approximately doubles the amount of reduction. Although some compensation occurs, reducing smoking still substantially reduces toxic exposure. Reduction increases motivation to quit.

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SYM9  CAN NICOTINE REReplacement PRODUCTS BE USED FOR HARM REDUCTION?

Saul Shiffman*, Ph.D., University of Pittsburgh & Pinney Associates, David Burns, M.D., University of California, San Diego, John Hughes, M.D., University of Vermont, Janine Pillitteri, Ph.D., Pinney Associates

As many smokers seem unable or unwilling to quit smoking completely, attention has turned to the potential for strategies to reduce tobacco-related harms. This symposium discusses the role of nicotine replacement therapy (NRT) in harm reduction. Saul Shiffman introduces the concept behind using medicinal nicotine to substitute, in part or in whole, for tobacco-delivered nicotine. He distinguishes different applications of NRT for harm reduction, and the suitability of current and potential NRT products for harm reduction. Some harm-reduction strategies use NRT to help smokers smoke less. David Burns discusses epidemiological data relating reduced smoking to reduced health hazards from smoking. Next, John Hughes reviews data from several studies showing that NRT can help smokers achieve and maintain reductions in smoking. Several studies also suggest that engaging in reduction increases rather than decreases progress towards quitting. Finally, Janine Pillitteri presents survey data showing that current smokers express little interest in smoking reduction unless it is linked with ultimate cessation. Two discussants place this material in the broader context of tobacco-based harm reduction products and policies. Lynn Kozlowski applies the risk-equilibrium model to the risks and benefits of NRT as a harm-reduction strategy. Mitch Zeller discusses the larger policy, legislative, and regulatory context considering both NRT- and tobacco-based harm reduction strategies.

Pinney Associates consult exclusively on smoking cessation to GlaxoSmithKline Consumer Healthcare, and their participation is supported by GSKCH. GSKCH sponsored the research reported by Dr. Pillitteri. NIIH and the UC Tobacco-Related Disease Research Program sponsored research reported by Drs. Hughes and Burns.

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SYM9C

ESTIMATING THE BENEFITS OF REDUCING EXPOSURE TO SMOKE AS A HARM REDUCTION STRATEGY

David M. Burns, M.D.*

Harm reduction strategies that reduce exposure to cigarette smoke or reduce the toxicity of cigarette smoke should produce less harm than continued smoking at the same level, but they cannot reduce the level of risk below that achieved by complete abstinence from all tobacco products. Using data from the American Cancer Society Cancer Prevention Study I, a series of estimates are generated for reductions in exposure of different proportions beginning at different ages. These estimates are constructed using the difference in age specific risks between current cigarette smokers of different numbers of cigarettes smoked per day. These differences are multiplied by the fraction of excess risk that remains after different durations of abstinence in order to estimate the magnitude and time course of the change in risk that would result from reducing one level of consumption to a lower level. The disease risks estimated for reductions in consumption are presented in comparison to their upper bound (continuing smoking at the same level of consumption), and their lower bound (complete abstinence), as the smoker advances in age following the transition to a lower level of consumption. Estimates are provided for disease specific risks and are also provided as years of life saved by reductions of different magnitudes from different levels of consumption. This process of estimation informs the discussion of the magnitude and time course of what might be achieved by harm reduction strategies that result in reductions in amount of total smoke exposure or reductions in the toxicity of smoke exposure. Existing literature reporting risks for smokers who reduce the amount that they smoke will also be reviewed.

Funding: UC TRDPR Grants, GlaxoSmithKline.

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SYM9D

SMOKERS’ INTEREST IN SMOKING REDUCTION VS. SMOKING CESSATION

Janine L. Pillitteri*, Ph.D., Saul Shiffman, Ph.D., Joe G. Gilchell, B.A., Pinney Associates; John R. Hughes, M.D., University of Vermont; Steven L. Burton, M.B.A., GlaxoSmithKline Consumer Healthcare

Considerable debate has occurred about the benefits and risks of a strategy to encourage smokers unable or unwilling to quit to reduce their smoking. Little research to date has focused on smokers’ reactions and receptivity to the idea of using nicotine replacement to reduce smoking. A random-digit dialed telephone survey was conducted in March 1998 with a national sample of 1000 cigarette smokers. Overall, 57.6% reported ever trying to reduce the number of cigarettes smoked. A large percentage of respondents indicated they would consider using either a “product” (71.0%), a “product containing nicotine” (65.7%), a “nicotine patch” (58.3%), or nicotine gum (45.3%) to help reduce their smoking. However, of those that had a preference, respondents overwhelmingly preferred a product that helps them reduce and then quit completely (74.7%) versus a product that helps them reduce and then maintain their smoking at a reduced level (25.3%). Smokers’ interest in a reduction product decreased as recommended length of use of the product increased. Overall, smokers were interested in reducing their smoking for harm reduction, but the majority were interested in reduction primarily as a method to quit altogether, not as an end in itself.

This study was supported by GlaxoSmithKline Consumer Healthcare (GSKCH). The authors not affiliated with GSKCH perform consulting services on their behalf.

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SYM10

EVALUATING AND BUILDING AN EVIDENCE BASE FOR THE FRAMEWORK CONVENTION ON TOBACCO CONTROL: RECENT FINDINGS FROM THE INTERNATIONAL TOBACCO CONTROL POLICY EVALUATION SURVEY

Geoffrey T. Fong*, Ron Borland, Gerard Hastings, and K. Michael Cummings for the ICTPES Research Team

The Framework Convention on Tobacco Control is the most important milestone in the history of global tobacco control, but there is a need to build an evidence base for the effectiveness of the FCTC policies. The International Tobacco Control Policy Evaluation Survey (ITC-PES) is a random digit dialed phone survey of a cohort of over 8,000 adult smokers throughout four countries—Canada, United States, United Kingdom, and Australia—whose objective is to evaluate the psychosocial and behavioral effects of the tobacco control policies that are included in the FCTC. This symposium presents data on four important policy domains of the FCTC. Nancy Kaufman will chair the symposium.

Geoffrey Fong presents data demonstrating that the enhancement of warning labels in the U.K. in January 2003 led to substantial increases in label salience and other label-relevant measures relative to the other three countries. Ron Borland presents data on the variability of smoke-free laws both across countries and among states in the U.S. Gerard Hastings presents data showing that the comprehensive ban on advertising/promotion in the U.K. in February 2003 led to significant declines in salience of advertising/promotion, compared to the other three countries, but that challenges remain in reducing or eliminating channels of promotion not covered in that ban. Michael Cummings presents data on differences among the four countries in purchase patterns, focusing on how smokers compensate for price increases by methods other than quitting or reducing consumption. As discussant, Judith Wilkenfeld will comment on how the ITC-PES findings can be of use to policymakers and advocates in the FCTC implementation and ratification process.

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SYM10A

QUASI-EXPERIMENTAL EVALUATION OF THE ENHANCEMENT OF WARNING LABELS IN THE UNITED KINGDOM: INITIAL FINDINGS FROM THE INTERNATIONAL TOBACCO CONTROL POLICY EVALUATION SURVEY

Geoffrey T. Fong*, David Hammond, Ron Borland, Gerard Hastings, and K. Michael Cummings for the ICTPES Research Team

Enhancement in warning labels is an important policy of the Framework Convention on Tobacco Control. In January 2003, the United Kingdom enhanced their warning labels up to the FCTC minimum standard. We evaluated this enhancement via the International Tobacco Control Policy Evaluation Survey (ITC-PES), a random digit dialed telephone survey of a cohort of over 8,000 adult smokers across four countries—Canada, United States, United Kingdom, and Australia—whose primary goal is to evaluate the psychosocial and behavioral impact of tobacco control policies of the FCTC. The baseline wave began in October 2002 and the second wave began in May 2003. The results of this quasi-experimental study demonstrate that the enhancement of the U.K. warning labels led to substantial increases in warning label salience, thinking about warning labels, increases in reported forgoing of a cigarette because of the warning labels, perceived effectiveness of the warning labels, considering warning labels as a motivation to quit, and other policy-relevant measures, relative to the other three countries over the same time period. These results provide strong evidence for the effectiveness of the FCTC requirement for warning labels.

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SYM10B

RESTRICTIONS ON SMOKING ACROSS FOUR COUNTRIES: FINDINGS FROM THE INTERNATIONAL TOBACCO CONTROL POLICY EVALUATION SURVEY

Ron Borland*, Hua H. Yong, Geoffrey T. Fong, David Hammond, K. Michael Cummings, and Gerard Hastings for the ITCPES Research Team

Legislation to eliminate smoking in public places is a major provision of the Framework Convention on Tobacco Control. Attempts to restrict smoking in public places, including workplaces, can proceed from voluntary restrictions imposed by employers, under obligations of generic legislation mandating safe environments, or under specific legislation mandating smoke-free environments. This presentation reports data relevant to the issue of smoke-free legislation from the International Tobacco Control Policy Evaluation Survey (ITCPES), a random digit dialed telephone survey of a cohort of over 8,000 adult smokers across four countries—Canada, United States, United Kingdom, and Australia—whose primary goal is to evaluate the psychosocial and behavioral impact of tobacco control policies of the FCTC. The results from the baseline wave, collected in October-December 2002, demonstrate that the U.K. has the fewest and least restrictive smoke-free laws, and Australia has the most widespread restrictions. In Canada and the USA, because a lot of activity is at local levels, there is more variability. Modelling shows that smokers’ approval of total bans in restaurants is far higher where the smokers report extensive restrictions and/or where state level bans are in place. Being older and being a lighter smoker are among other predictors of support. Overall, the results identify few barriers that legislators are likely to face from smokers in moving towards bans on smoking.


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SYM10C

EVALUATION OF THE COMPREHENSIVE BAN ON TOBACCO ADVERTISING AND PROMOTION IN THE UNITED KINGDOM: INITIAL FINDINGS FROM THE INTERNATIONAL TOBACCO CONTROL POLICY EVALUATION SURVEY


After two decades of debate, the United Kingdom introduced a comprehensive ban on tobacco promotion in February 2003, outlawing mass media advertising and direct mail and introducing transitional regulation on point-of-sale, brand-sharing, and sponsorship. We evaluated this ban via the International Tobacco Control Policy Evaluation Survey (ITCPES), a random digit dialed telephone survey of a cohort of over 8,000 adult smokers across four countries—Canada, United States, United Kingdom, and Australia—whose primary goal is to evaluate the psychosocial and behavioral impact of tobacco control policies of the FCTC. The baseline wave began in October 2002 and the second wave began in May 2003. Smokers in the U.K. reported significant declines on nearly all indicators of salience of tobacco advertising and promotion over the 7-month time period (e.g., declines in general salience of tobacco advertising, noticing advertising on television, radio, posters/billboards, and print media) relative to smokers in the other three countries over the same time period. This same pattern also occurred for promotional activities such as free samples and special price offers, but not for other avenues of tobacco promotion not completely covered by the ban or existing restrictions (e.g., some segments of the entertainment media). We conclude that the U.K. promotion ban has had its desired initial impact, but there remain significant channels for tobacco promotion.


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SYM10D

CIGARETTE PURCHASE PATTERNS AND CIGARETTE PRICES IN FOUR COUNTRIES: FINDINGS FROM THE INTERNATIONAL TOBACCO CONTROL POLICY EVALUATION SURVEY

K. Michael Cummings*, Andrew Hyland, Mark Travers, Geoffrey T. Fong, Frank J. Chaloupka, Hana Ross, and Fritz Laux for the ITCPES Research Team

There exists a negative relationship between cigarette prices and smoking prevalence and consumption. However, reducing consumption and quitting are only two possible responses to a price increase; we know little about other responses that confer no public health benefits, for example, buying from cheaper sources. We present data from the International Tobacco Control Policy Evaluation Survey (ITCPES), a random digit dialed telephone survey of a cohort of over 8,000 adult smokers across four countries—Canada, United States, United Kingdom, and Australia. The results from the baseline wave, collected in October-December 2002, demonstrate that: (1) the four countries vary in the likelihood that smokers will make a special effort to get cigarettes less expensively, with the U.S. being the highest (24.2%) and Australia being the lowest (19.5%); (2) rates of purchasing cigarettes from people selling cigarettes door to door or in the street were highest in the UK (15.7%) and lowest in the U.S. (2.3%); (3) Within the U.S. and Canada, the likelihood of seeking cheaper sources was greater in states/provinces with higher taxes; and (4) Use of the Internet to purchase lower priced cigarettes was low, ranging from 0% in Canada and Australia to 1.5% in the U.S.. These findings highlight the importance of understanding and possibly controlling these avenues by which tax increases lead to behaviors that confer no public health benefit.


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**YI-1**

**GENETIC INFLUENCES ON DSM-IV NICOTINE WITHDRAWAL**

Michele L. Pergadia¹, Andrew C. Heath¹, Nicholas G. Martin², Julia D. Grant¹, Valerie S. Knopik¹, and Pamela A. F. Madden¹; ¹Washington University School of Medicine, in St. Louis, MO, ‘Queensland Institute of Medical Research, Australia

Little is known about genetic influences on nicotine withdrawal relative to other smoking related behaviors. This study examined whether there are genetic influences on nicotine withdrawal before and after controlling for regular smoking. We also examined whether genetic influences on nicotine withdrawal might be mediated in part by history of psychopathology. Data were obtained by telephone diagnostic interview (between 1996-2000) with 6257 individual Australian twins (3454 women, 2803 men; mean age=30). Genetic modeling of DSM-IV substance dependence criteria for nicotine withdrawal using Mx found significant additive genetic influences [A: 36% (95%CI: 8-48)]. Two-stage genetic models that accounted for lifetime regular smoking suggested genetic influences on nicotine withdrawal only partially overlapped with genetic influences on lifetime regular smoking [A = .47 (95%CI: .28-.64)]. Seventy-eight percent of the genetic variance in nicotine withdrawal was specific to nicotine withdrawal and 22% was common to regular smoking. Logistic-regression models found that significant genetic influences on nicotine withdrawal remained (p < .01) even after controlling for regular smoking [OR=1.5 (CI: 1.2-1.9)], alcohol dependence [OR=1.5 (CI:1.2-1.8)], major depression [OR=1.9 (CI:1.6-2.3)], panic disorder [OR=2.0 (CI:1.0-3.9)], conduct disorder [OR=1.4(CI:1.1-1.8)], and social phobia [OR=1.5 (CI:1.2-1.8)]. Results suggest there may be genes specific to nicotine withdrawal that differ from those that influence regular smoking and major forms of psychopathology.

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**YI-2**

**MODELING THE EFFECT OF ALCOHOL ON TOBACCO RELAPSE**

Sherry A. McKee, Ph.D.*, Suchitra Krishnan-Sarin, Ph.D., Julia Shi, M.D., and Stephanie O’Malley, Ph.D., Yale University School of Medicine

The primary aim of this project was to examine the role of alcohol use in tobacco relapse, as alcohol consumption is a known risk factor for poor smoking cessation outcomes. Increasing our understanding of alcohol-mediated tobacco relapse is important as the majority of abstinent smokers (up to 90%) who experience a lapse return to baseline smoking levels. Using an adaptation of our alcohol self-administration model (O’Malley et al., 2002), we have developed a human laboratory model to examine two primary aspects of alcohol-mediated tobacco relapse: 1) Does alcohol facilitate the initiation of the first cigarette? 2) Once the first cigarette is initiated, does alcohol facilitate subsequent smoking? Using a within-subject design, 15 moderate to heavy drinkers who were minimally nicotine deprived, received a priming drink (0.03 g/dl or placebo) and then had the option of initiating a tobacco self-administration session or delaying initiation by five minute increments for up to 50 minutes in exchange for monetary reinforcement. Subsequently, the tobacco self-administration session consisted of a one-hour period, in which subjects could choose to smoke their preferred brand of cigarettes using a smoking topography system or receive monetary reinforcement for cigarettes not smoked. Results demonstrated that during the alcohol condition, subjects were less able to resist the first cigarette and initiated their smoking sessions sooner, compared to the placebo condition. Once smoking sessions were initiated, subjects smoked more cigarettes during the alcohol condition, compared to the placebo condition. These findings have implications for smoking cessation in alcohol drinkers and model development for relapse behavior.

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**YI-3**

**ATTENTIONAL BIAS TO SMOKING-RELATED CUES IN HIGH AND LOW TRAIT ANXIETY SMOKERS AS A FUNCTION OF COMT GENOTYPE**

Marcus R. Munafò, Ph.D.*, Kate H. Roberts, M.Sc., Elaine C. Johnstone, Ph.D., University of Oxford

Attentional biases towards smoking-related cues have been demonstrated in smokers, suggesting that such cues are ascribed high levels of incentive salience and corresponding motivational value. However, the motivational features of these cues have not been investigated in relation to affective variables. We investigated the impact of trait anxiety on attentional bias towards smoking-related cues on a modified Stroop colour-naming task in a sample of 30 heavy smokers (defined as a score of 5 or greater on the FTND). Trait anxiety was measured using the STAI trait scale. Participants were also genotyped for the COMT gene, which has been associated with attentional functioning. A 2 x 2 x 2 MANOVA of interference scores, with masking (masked, unmasked) as a within-subjects factor, and trait anxiety (high, low) and COMT genotype (GG + GA, AA) as between-subjects factors indicated significant anxiety x masking (F [1, 26] = 6.69, p = 0.02) and anxiety x comt (F [1, 26] = 7.51, p = 0.01) interactions. Post-hoc analyses suggested that high trait anxiety smokers demonstrated greater attentional bias to smoking-related cues compared to low trait anxious smokers in the unmasked condition only. Among high trait anxious smokers, those with COMT AA genotype demonstrated greater bias than those with COMT GG or GA genotypes, irrespective of masking condition. These results indicate that the motivational properties of smoking-related cues may vary as a function of trait anxiety. Our preliminary genetic data also indicate that the COMT gene may be important in modulating the strength and nature of smoking-related attentional biases among high trait anxious smokers. These data will be discussed in the context of affect regulation and incentive sensitization models of nicotine addiction.

This research was supported by Cancer Research UK.

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CHRONIC NICOTINE ALTERS CANNABINOID RECEPTOR DENSITY IN PERIADOLESCENT MALE BUT NOT FEMALE RATS

Stephanie L. Collins, Ph.D.*, and Sari Izenwasser, Ph.D., University of Miami School of Medicine

Studies show that a significant number of youths use cigarettes, and more than half of the youths who smoke daily also use illicit drugs. We have shown previously that chronic treatment with nicotine produces sensitization to its locomotor-activating effects in female but not male periadolescent rats. In contrast, pretreatment with nicotine-produced cross-sensitization to a cocaine or amphetamine challenge in periadolescent male rats, but not in periadolescent female rats. To better understand the differential effects of nicotine in male vs. female periadolescents, rats (postnatal days 31-38) were injected with nicotine or saline for 7 days and killed on day 8 for quantitative autoradiography studies. Several studies have suggested that cannabinoid receptors may play a role in the behavioral effects of stimulant drugs, so CB1 receptor binding was measured. Cannabinoid receptor density was increased in the medial prefrontal cortex in periadolescent male rats pretreated with nicotine compared to vehicle controls. There were no differences, however, in the lateral prefrontal cortex, nucleus accumbens core or shell, or the caudate putamen in nicotine-pretreated male rats compared to their vehicle controls. In contrast, in periadolescent female rats pretreated with nicotine, there were no significant changes in cannabinoid receptor binding in any of the tested brain regions, compared to their controls. The medial prefrontal cortex has been shown previously to be involved in stimulant reinforcement, thus it is possible these changes contribute to the unique behavioral effects of chronic nicotine in the male rats compared to the female rats. This information may help us to better understand the development of drug addiction in adolescents and lead to differential treatments or preventions specific for age and sex.

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PA1-1
REDUCED ABSTINENCE FOR SMOKERS PREVIOUSLY TREATED WITH FLUOXETINE
Bonnie Spring*, Neal Doran, Sherry Pagoto, Dennis McCharque, Jessica Werth Cook, Katherine Bailey & Donald Hedeker

The catecholaminergic antidepressants, bupropion and nortriptyline, promote prolonged abstinence but, surprisingly, no beneficial result for smokers susceptible to depression. More serotoninergic fluoxetine yields a smaller, transient cessation advantage (Niaura et al., 2003) that is heightened for smokers with depressive symptoms (Hitsman et al., 1999). Consequently, we tested whether fluoxetine selectively enhances cessation for smokers with prior history of depression. Euthymic chronic smokers (54% female; mean age 43.5) with (n = 109) and without (n = 138) major depressive history were randomized to 3 months fluoxetine (60 mg) or placebo double-blind, plus group behavioral treatment to quit smoking. They received 9 treatment sessions over 12 weeks and monthly follow up for 6 months. GEE analysis showed significant drug*linear time [z = 2.43, p = .015] and history*quadratic time trends [z = 2.18, p = .029] for smoking outcome. The predicted history*treatment interaction was nonsignificant, though a prior stratified analyses indicated that fluoxetine improved treatment phase abstinence for smokers with (z = -2.27, p = .023) but not without (z = 0.06, p = .88) history of depression. Fluoxetine produced no overall cessation advantage during treatment and a disadvantage during follow-up: formerly drug-treated subjects were 3.3 times more likely to be smoking 6 months post-quit [OR = 3.33, z = 2.32, p = .020]. Being actively medicated with fluoxetine selectively supported abstinence for smokers vulnerable to depression, but having been drug-treated and withdrawn undermined prolonged abstinence regardless of history of depression. Whether high-dose SSRI treatment produces continuing effects that oppose tobacco abstinence warrants investigation.

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PA1-2
PRELIMINARY FINDING OF ALTERED HORMONAL RESPONSE TO A 5-HT1B/1D RECEPTOR AGONIST IN SMOKERS
Howard B. Moss*, Thomas L. Hardie, Joseph Galazin

OBJECTIVE: Several research groups have demonstrated altered responsivity of the serotoninergic system in smokers using non-specific serotonin releasing drugs. Pharmacologic challenge with the non-specific serotonin releaser, fenfluramine has been shown to result in diminished prolactin responses among smokers. The purpose of this ongoing experiment is to evaluate the neuroendocrine responses to the relatively specific 5-HT1B/1D receptor agonist, sumatriptan in smokers and non-smokers. A primary function of the 5-HT 1B/1D receptor class is to function as presynaptic terminal receptors that modify the release of neurotransmitters, acting as heteroreceptors on neurons post-synaptic to 5-HT terminals, and as autoreceptors on 5-HT synaptic terminals and neuronal varicosities. Few, if any studies have investigated the status of the human 5-HT1B/1D receptor in smoking.

METHOD: To date, we have challenged 18 men (12 non-smokers and 6 smokers) with a 6 mg subcutaneous injection of sumatriptan succinate and performed serial blood sampling over two hours post-injection. Timed plasma samples were assayed for growth hormone (GH) and prolactin (PRL) using commercially available radiimmunoassay kits.

RESULTS: For PRL area-under-the curve responses, smokers showed a significantly reduced integrated PRL output over time (t = 2.67, df = 16; p < .05). However, smokers and non-smokers did not differentiate on the basis of GH responses (t = -0.69, df = 16; p = n.s.).

CONCLUSIONS: The preliminary results support the hypothesis that serotoninergic regulation of PRL secretion is altered in smokers. These effects may be mediated through the regulatory effects of 5-HT1B/1D receptor system or be a consequence of elevated counteracting effects of smoking on dopaminergic neurotransmission.

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PA1-3
THE ANTAGONISM OF TOBACCO CRAVING BY GLUCOSE IS POTENTIALLY MEDIATED BY TRYPTOPHAN AND SEROTONIN

BACKGROUND: Previous studies have shown that glucose decreases tobacco craving and adjunction of glucose to NRT increases abstinence rate. Glucose ingestion facilitates tryptophan’s (TRP) transport into the brain by stimulating insulin secretion which clears long chain neutral amino acids and by this mechanism renders the blood-brain transporter for TRP. The only source of serotonin (5HT) synthesis is TRP.

HYPOTHESIS: Glucose ingestion decreases tobacco craving by promoting blood-brain TRP transport and thereby SHT synthesis. Aims: To assess whether high dose glucose antagonizes tobacco craving, withdrawal symptoms, impaired choice reaction time while decreasing plasma TRP and increasing blood SHT. Methods: 12 temporarily abstinent smokers were administered placebo (aspartame, A) and 2 doses of glucose (75 g [G75] and 32.5 g [G32.5]) in water) in a double-blind, cross over study.

RESULTS: During abstinence plasma cotinine decreased, and plasma nicotine was undetectable. Plasma glucose and insulin increased with glucose but not with aspartame. Glucose ingestion decreased plasma TRP (p=.001) and antagonized increase in craving assessed by the short version of the Tobacco Craving Questionnaire (treatment by time interaction: p=.02, G75 and G32.5 vs A, p=.03). Blood SHT was lower in women than in men, and there was a treatment by time by sex interaction (p=.025); blood SHT increased with G75 (p=.005) but not with A or G32.5. Motor reaction time increased after placebo (A) but decreased with G32.5 and G75 (treatment by time interaction: p=.016).

CONCLUSIONS: High dose glucose antagonizes increase in tobacco craving during abstinence. This effect may result from the increased brain availability of TRP and increased SHT synthesis. Further studies have to confirm this hypothesis.

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Bupropion, an atypical antidepressant, is also an effective aid to smoking cessation (ZYBAN®). Bupropion is extensively metabolized to several metabolites with hydroxybupropion being the major one. However, little is known about the effects of enantiomers of bupropion and its metabolites in mood control or as a treatment for nicotine dependence. In order to characterize the involvement of metabolites in bupropion's effects, studies were conducted to investigate the effects of hydroxybupropion and its enantiomers in different in vivo and in vitro pharmacological tests. Racemic hydroxybupropion was found to be an active nicotinic antagonist blocking the acute in vivo effects of nicotine in mice, with a potency similar or higher to that of bupropion. Furthermore, a remarkable enantioselectivity was also observed with bupropion’s (2S)- and hydroxybupropion being 10-20 fold more potent than the (2R,3R)-hydroxybupropion in blocking the different effects of nicotine. In vitro studies showed that both (2S,S)- and (2R,3R)-hydroxybupropion are less potent than bupropion as functional antagonists of α3β4*-nAChR (6.6 and 11 µM IC50) and a4b4-nAChR (45 and 37 µM IC50) and show little evidence for stereoselectivity at those nAChRs. However, (2S,3S)-hydroxybupropion has ~10-fold higher functional inhibitory potency at a4b2- nAChR than the 2R-3R isomer (IC50 values of 3.2 and 35 µM, respectively) and >4-fold more potency than racemic bupropion (16 µM IC50). Finally, we found that (2S,3S)-hydroxybupropion had an IC50 value of 519 nM for inhibition of [3H]NE neuronal uptake, whereas (2R,3R)-hydroxybupropion did not show any uptake inhibition at a concentration of 10 µM. Our results suggest that the effects of bupropion’s major metabolite may be critical to its anti-smoking and antidepressant activities. Supported by grant # NIH DA-05274 and ADFRC 5011.

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PA1-5 NICOTINE PRETREATMENT REDUCES BEHAVIORAL DESAIR PRECIPITATED BY STRESS: SEX DIFFERENCES

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Two experiments were performed on male and female adult Sprague Dawley rats to study the interaction between nicotine and stress. Experiment 1 aimed to study the effects of chronic nicotine on behavioral despair compared to fluoxetine. Rats received nicotine (0.4 mg/kg), fluoxetine (5 mg/kg) or saline for 15 days before forced swim tests. Sex and treatment emerged as significant main effects in freeze duration and swimming parameters implying greater behavioral despair in male rats than females; while fluoxetine prevented despair, nicotine was not effective. Experiment 2 aimed to study the effect of chronic nicotine and stress exposure on despair (animal model for smokers exposed to stress). Rats were treated with nicotine or saline for 30 days and were stressed (restraint) for 15 days starting the 16th day of injections. After the treatments, forced swim tests were performed. Nicotine prevented behavioral despair induced by stress (freez duration decreased and struggling increased) compared to controls. Post-hoc tests depicted significantly reduced freeze duration in males and increased struggling in females. Experiment 2 also involved postmortem measurements of NO metabolites in amygdala, hippocampus and striatum. Stress resulted in elevated metabolite levels and significant sex x nicotine interactions were observed; while nicotine decreased NO metabolites in females, an opposite effect was observed in males. Nicotine also reduced weight gain, and there was a significant sex interaction: saline treated females gained less weight than male counterparts.

Our results suggest that nicotine pre-treatment reduces behavioral despair precipitated by stress, that the responses are sexually dimorphic and involve NO.

Institutional.

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PA1-6 GABAB RECEPTOR AGONIST (BA ClOFE N): EFFECTS ON SMOKING CRA VING AND WITHDRAWAL SYMPTOMS

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Limited human studies explored GABA receptor agonists in the treatment of cigarette smoking dependence. We investigated the effect of the GABA receptor agonist (baclofen) on craving and withdrawal symptoms in a validated human model of smoking abstinence. Forty-eight subjects (24 males and 24 females) were enrolled in a double blind, randomised, 3 period, crossover study. Subjects went through three periods (three days each) of: free smoking, abstinence with baclofen treatment or abstinence with placebo. Baclofen and placebo were administered for 15 days, starting 10 days before abstinence period and finishing 2 days after (5mg oral capsule three times daily for the initial 2 days followed by 10mg three times daily for 11 days and then 5mg three times daily for the last 2 days). Self-reported questionnaires were administered; the Questionnaire on Smoking Urges-Brief for craving, the Smoker Complaint Scale and the Shiftman-Jarvik Smoking Withdrawal Questionnaire for withdrawal symptoms. Craving was reported by 73% of subjects on placebo and baclofen, compared with 38% on smoking. The intensity of craving was significantly lower with smoking than with baclofen and placebo. No difference was found between baclofen and placebo. The intensity of withdrawal symptoms was significantly lower with smoking compared with placebo and baclofen. No difference was found between baclofen and placebo. Moreover, the Smoker Complaint Scale detected a significant higher score with baclofen, compared to placebo, in a subset of items referring to confusion. These results show that a GABA agonist as baclofen, does not reduce smoking craving and withdrawal symptoms in a short term setting, rather seems to worsen some components of acute smoking withdrawal.

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PA1-7 BACLOFEN DOSE-DEPENDENTLY PREVENTS MECAMYLAMINE-PRECIPITATED NICOTINE ABSTINENCE SYNDROME

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Baclofen is a GABA-B agonist previously shown to interfere with self-administration of several addictive drugs, including nicotine. The present study determined whether baclofen could dose-dependently reduce the state of nicotine dependence, as indicated by the number of nicotine abstinence signs subsequently precipitated by the nicotinic antagonist mecamylamine. The study employed a dose of mecamylamine shown to precipitate a vigorous abstinence syndrome in nicotine dependent, but not in non-dependent rats. Twenty-one male Sprague-Dawley rats were rendered nicotine-dependent by seven days subcutaneous infusion of 9 mg/kg/day nicotine bitartrate (3.15 mg/kg/day nicotine expressed as the base). Groups of seven rats were then injected with either 0.175 or 0.4 mg/kg baclofen in saline or with saline alone. They were challenged 90 minutes later with 1 mg/kg mecamylamine s.c. and observed over 30 minutes under blind conditions on a standard checklist of nicotine abstinence signs. Baclofen injection resulted in a dose-dependent reduction of subsequent mecamylamine-precipitated overall abstinence signs (cumulated across all categories). One-way ANOVA indicated a significant, p <0.001, baclofen dose effect and a significant negative linear trend of overall signs as a function of dose, p < 0.001. Post-hoc pairwise comparisons (Fisher’s LSD test) indicated significant differences between all three groups. These results, together with an earlier experiment showing attenuation of an ongoing spontaneous nicotine abstinence syndrome, raise the possibility that GABA-B agonists might be useful in smoking cessation.

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PA1-8

CHOLINEGIC CONTROL OF GABA INHIBITION IN THE PREFRONTAL CORTEX (PFC) OF NICOTINE-EXPOSED RATS

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The hyperactivity of the basal forebrain (BFA) afferent input to the PFC may play a pivotal role in the pathophysiology of nicotine addiction. Using confocal microscopy we have recently observed increased density of the subset of interneurons expressing calretinin in the PFC of nicotine-dependent rats. We have recently applied in vivo intracellular recordings/labeling technique to compare/contrast synaptic responses/spontaneous activity in vehicle- and nicotine-dependent rats, by single shock and high-frequency stimulation of BFA. Single shock produced an EPSP/IPSP sequence and, on occasion, slow depolarization (avg onset latency:143ms/sec; amplitude: 12mV), with increases in size and frequency of slow depolarization in nicotine-treated rats. Furthermore, high frequency stimulation of BFA suppressed spontaneous firing activity in PFC pyramidal neurons. The depressing responses of cortical neuronal activity to high frequency stimulation of the BFA are thought to be due to co-activation of cortical interneurons, as they are preferentially targeted by BFA afferent input. Thus, non-pyramidal interneurons in rat PFC slices are selectively targeted for whole cell recordings under infrared DIC microscope. We found that nicotine selectively excites a subpopulation of interneurons with a bipolar/bi-tufted morphology (n=6), and this excitation persisted in the presence of glutamate, GABA and muscarinic antagonists. Furthermore, electrical stimulation of layer I in cortical slices produced synaptically-evoked IPSPs (averaged size:13mV) in layer V pyramidal neurons, which were reduced to 49% by a puffed application of 5 mM ACh and blocked by pretreatment with muscarinic antagonist, atropine. Roles of mAChRs in the presynaptic regulation of GABA afferents from BFA and of intercortical GABA collaterals are under way.

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PA2-1

THE EFFECTIVENESS OF BUPROPION SR AND PHONE COUNSELING FOR LIGHT AND HEAVY SMOKERS

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It is widely believed that heavy smokers are harder to treat and often more intensive treatment is recommended. Yet it is not known whether this is true for cessation programs that include phone counseling and bupropion SR. Results are presented from a open-label, randomized study of smoking cessation (n=1524) conducted at a large healthcare system in Seattle, WA. Data were collected at baseline, 3- and 12-months. Baseline smoking was stratified into light (<20/day) and heavy (20+/day). For those receiving proactive phone counseling (Free & Clear, n=765), nonsmoking rates at both follow-up points were impressive overall, but significantly higher for light smokers compared to heavy smokers (40% vs. 25% at 3 months, p<.0001; 39% vs. 29% at 12 months, p<.005), suggesting that phone counseling is more effective with lighter smokers. Although at 12 months the two bupropion SR doses (150/300mg) were equally effective, at 3 months the higher dose was related to greater nonsmoking rates in heavy smokers only. A noteworthy finding was a sleeper-effect for those receiving 150mg: 5-8% smoking at 3 months went on to quit at 12 months. This study has important implications for health care operations. Findings suggest that phone counseling is highly effective with lighter smokers and that it is not necessary to dose based on level of smoking. It is possible to obtain high quit rates at lower doses when combined with phone counseling.

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PA2-2

EFFICACY OF BUPROPION SR ALONE AND COMBINED WITH 4-MG NICOTINE GUM

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608 adult smokers (52% women; mean age = 42) participated in a randomized double-blind placebo-controlled study that examined the efficacy of bupropion SR (150 mg., b.i.d.) alone and bupropion SR with 4-mg nicotine gum. Participants were randomized to one of three conditions: 1) active bupropion SR, active nicotine gum (n = 228); 2) active bupropion SR, placebo nicotine gum (n = 224); or 3) placebo bupropion SR, placebo nicotine gum (n = 156). All participants also received three brief, 10-minute counseling sessions. Results indicate that at the end of treatment both active bupropion/active gum (38.2% abstinence; OR = 2.95, p < .001) and active bupropion/placebo gum (31.3% abstinence; OR = 2.17, p = .002) significantly improved cessation rates relative to the double placebo condition (17.3% abstinent). At the six-month follow-up, again both active bupropion/active gum (22.8%; OR = 1.71, p = .05) and active bupropion/placebo gum (24.6% abstinence; OR = 1.88, p = .02) were shown to improve abstinence rates relative to the double placebo condition (14.7% abstinent). However, when the six-month data were analyzed by gender, results suggest that relative to the double placebo condition, only active bupropion/active gum significantly improved abstinence rates for women (OR = 2.16, p = .05) and only active bupropion/placebo gum improved abstinence rates for men (OR = 2.07, p = .056).

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PA2-3

TELEPHONE COUNSELING FOR SMOKING CESSATION: EFFECTS OF NUMBER AND DURATION OF COUNSELING SESSIONS AND NRT USE

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The 2000 Clinical Practice Guideline recommended future research on dose response for counseling interventions. From February 2002 through April 2003 the American Cancer Society randomized 3372 clients to a dose-response trial designed to compare the effectiveness of variations in the number, length, and duration of telephone counseling sessions. A three-by-two experimental design was employed. Clients were randomized to receive one of three counseling protocols: (1) the American Cancer Society Outline standard five session counseling protocol, (2) three sessions with a total duration equivalent to one-half of the five session protocol, and (3) five abbreviated sessions with duration of counseling under ten minutes each. A proportion of study participants was also randomized to receive self-help booklets only. Attempts were made to contact all randomized cases three months after their estimated quit date to determine their quitting success and medication use. Approximately 30% of the clients reported using NRT. Results from the participants contacted at follow-up show a significant overall NRT effect (20% vs. 14%, p<.001) and a significant overall counseling effect (18% vs. 10%, p<.001). A significant interaction between overall counseling and NRT use indicated NRT was only associated with increased success rates among clients randomized to counseling, not among those randomized to self-help. There was a trend toward higher quitting rates in the three session and standard five- session protocols than in the abbreviated five- session protocol. The association of NRT with an increase in quitting success also differed among the 3 counseling protocols. While preliminary, this finding has implications for tailoring protocol selection to anticipated NRT use.

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PA2-4  INCREASED REACH AND EFFECTIVENESS OF A STATE-WIDE TELEPHONE HELPLINE AFTER THE ADDITION OF ACCESS TO NRT

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The Minnesota Partnership for Action Against Tobacco (MPAAAT) provides state-wide telephone counseling services through the QUITPLAN Helpline. In September 2002, access to NRT (patch, gum) was added for callers who enrolled in a multi-session phone intervention (Free & Clear, Center for Health Promotion, Group Health Cooperative of Washington). An independent helpline evaluation included follow-up surveys of a random sample of callers 2 weeks and 6 months after their initial call. We compare assistance with tobacco cessation and quit rates pre-NRT and post-NRT. The introduction of NRT into helpline services was associated with a sudden surge (2003 calls in 3 days) and sustained increase in calls (366 calls/month pre-NRT vs. 1076 calls/month post-NRT). The response rate to the 6-month survey was 57% (238/418) pre-NRT and 43% (257/594) post-NRT. At the 6 month follow-up, callers post-NRT had spoken to tobacco cessation specialists more often (Mean=2.75 times pre-NRT vs. 4.02 times post-NRT, p<0.001) and were more likely to have used any pharmacotherapy (49% pre-NRT vs. 85% post-NRT, p<0.001). Using intention-to-treat analysis, there was an increase in the seven-day point prevalence of abstinence from 11.0% pre-NRT to 17.5% post-NRT (p=0.004). The addition of NRT to the QUITPLAN Helpline was associated with an increase in call volume and quit rate among callers. Integration of access to pharmacotherapy increases the reach and effectiveness of state-wide helpline services.

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PA2-5  PREDICTORS OF EARLY RELAPSE IN SMOKERS RECEIVING NICOTINE REPLACEMENT TREATMENT

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Early relapse after a smoking-cessation attempt is endemic, even for those who receive pharmacotherapy and/or behavioral counseling. Those who can remain abstinent for the first 2 weeks post-cessation have a significantly higher likelihood of succeeding. Given the importance of this early period, we studied variables related to early relapse among a sample of 371 smokers who were receiving nicotine replacement (nicotine patches) as they undertook a quit smoking attempt. We used both baseline data and data collected from post-cessation daily diaries and from questionnaires at office visits to examine prospectively variables related to early relapse. Forty-seven percent of smokers relapsed in the first 3 days post-cessation and 66% by 1 month post-quit. Baseline predictors of relapse were lower confidence levels, not being married or living with a significant other, somatic complaints (self-reported headaches, rapid heart rate, dizziness and/or nausea), and higher levels of depressive symptoms. Post-cessation variables related to relapse were higher cigarette-craving levels and negative affect, greater withdrawal severity, and somatic complaints. These post-quit variables had their strongest predictive power in the first 10 days post-quit; after day 10, these variables were unrelated to relapse. Results suggest that there is a pattern of unpleasant somatic and psychological symptomatology evident both at baseline, and in the first 10 days post-quit that predicts subsequent relapse. Treatment programs may need to address these clusters of negative states in order to improve smoking-cessation outcomes in the early post-quit period.

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PA2-6  TRANSDERMAL NICOTINE-INDUCED WITHDRAWAL SUPPRESSION IN SMOKERS: A DOSE COMPARISON

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Transdermal nicotine (TN) is an over-the-counter medication with proven efficacy as a smoking cessation pharmacotherapy. TN is thought to work, at least in part, by suppressing withdrawal symptoms in abstinent smokers. While TN-induced withdrawal suppression has been demonstrated, the most effective withdrawal-suppressing dose is uncertain. The purpose of this acute laboratory study is to examine if higher TN doses produce increased withdrawal suppression during acute abstinence. Forty-five overnight-abstinent smokers completed four, double-blind, randomized, 6.5-hour laboratory sessions in which further cigarette abstinence was required. Sessions differed by TN dose (0, 7.2, 21, or 42 mg). Outcome measures included half-hourly assessment of plasma nicotine level, continuous assessment of heart rate, and hourly assessment of tobacco/nicotine withdrawal. Preliminary results from 22 subjects (4 women) reveal significant dose-related increases in plasma nicotine level and heart rate, and dose-related decreases in subjective ratings of “impatient”. Relative to placebo, active nicotine suppressed a variety of withdrawal symptoms, including “urge to smoke,” “irritability,” “anxious,” and “craving a cigarette,” but this TN-induced withdrawal suppression was not dose-related. Results from this laboratory study suggest that, relative to placebo, TN suppresses many withdrawal symptoms effectively. Failure to observe a dose-relationship on some measures of nicotine/tobacco withdrawal may indicate a ceiling effect on TN-induced withdrawal suppression.

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PA2-7  UNDERSTANDING AND IMPROVING NRT: NICOTINE, COTinine, CRAVING, WITHDRAWAL AND NASAL SPRAY USE IN AFRICAN AMERICAN MALE SMOKERS DURING EARLY ABSTINENCE

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Inadequate dosing of nicotine replacement therapy (NRT) is common and compromises product efficacy. To understand how dosing might be improved, 28 smokers followed their typical smoking schedule (day 1) then used nicotine nasal spray ad libitum without smoking (days 2-5). All subjects were African American men to reduce variability in nicotine metabolism. During the 5-day inpatient stay, venous blood samples and self-reported cravings and withdrawal symptoms were obtained bihourly during waking. RESULTS: Subjects used far less than the recommended 8-40 sprays per day (mean sprays/day = 3.9; range = 2-13). Plasma nicotine/cotinine levels, cravings, withdrawal symptoms, and number of sprays per day, all showed large inter-individual variability and dissipated across the 4 days of spray use. Nicotine levels did not predict craving ratings after accounting for time since last cigarette. CONCLUSION: Compliance with spray use was very poor in the early quit period. This finding is especially striking given that no other source of nicotine was available, and highly troubling given that it is a time when nicotine is especially important for warding off withdrawal symptoms. Results highlight the importance of encouraging NRT compliance early in the post-quit period to combat withdrawal symptoms and of addressing non-nicotine factors throughout a quit attempt to keep cravings at bay.

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PA2-8  
A RANDOMIZED TRIAL OF THE EFFICACY OF THE NICOTINE GUM AND PATCH FOR ADOLESCENT SMOKERS

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Many adolescents become addicted to tobacco smoking and fail in their attempts to quit. We conducted a study to determine the preliminary efficacy and safety of the nicotine gum and patch for adolescents who want to quit smoking. In this 3-month randomized trial, we had 3 groups (21 mg patch, 2 or 4 mg gum, placebo). Cognitive behavioral group therapy was offered to all 3 groups. We randomized 118 adolescents (ages 13 through 17 years) smoking at least 10 cigarettes per day (CPD) and scoring at least 5 on the Fagerström Test for Nicotine Dependence. Of 50 completers (age 15.4±1.5 years, 64% female, 66% Caucasian, 53% at least one psychiatric diagnosis, 41% current marijuana use), biochemically confirmed (exhaled carbon monoxide less than 6 ppm) continuous and point prevalence abstinence rates at 3 months were achieved by 24% and 44% respectively (10% and 19% of 118 randomized): mean decrease in self-reported cigarette consumption was 14.4±8.3 CPD for completers at 3 months. However, preliminary analyses using Fisher's exact test and analysis of variance showed that medication group assignment was not significantly associated with proportion abstinent (continuous or point prevalence abstinence) or with change in CPD among completers. While the effect of behavioral intervention in our study might have exceeded that of medication, cessation rates for this highly dependent sample of comorbid adolescents are encouraging. Further analyses of all randomized participants, including compliance rates, cotinine levels, adverse events and survival analysis by group will clarify the effects of NRT for these adolescent participants.

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PA3-1  
NORMATIVE SOCIAL IMAGES OF SMOKERS: PERCEPTIONS OF WHAT FRIENDS THINK MATTERS

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According to the Prototype/Willingness Model and the Theory of Planned Behavior, children’s social images of smokers are related to intentions to smoke in the future. In this paper, we test the hypothesis that not only do children’s positive social images (prototypes) of smokers predict children’s intentions to smoke in the future, but also that their perception of their friend’s positive prototypes predict intentions. Data are from the Oregon Youth Substance Use Project (OYSUP), a cohort-sequential longitudinal study which followed over 1000 children for four years, beginning when they were in the first through fifth grade. Collapsing across cohorts, data from 600 fifth graders were used for this paper. Prototypes were measured by a scale consisting of three trait descriptors, cool, popular and exciting. Guttman analyses of these items showed that children progress developmentally from attributing the characteristic of popular to smokers, to attributing both popular and exciting to smokers, and finally to attributing all three characteristics, popular, exciting, and cool to smokers. Perceptions of friends’ prototypes were more positive than their own prototypes, suggesting that children may overestimate their friends’prototypes. As expected, fifth graders’ prototypes were correlated with their perception of friends’ prototypes (r =.62), yet controlling for the participants’ prototypes, perception of friends’ prototypes uniquely predicted future intentions to smoke cigarettes, measured at the subsequent assessment. Further, for girls only, perceptions of friends’ prototypes predicted an increase in their own prototypes in the subsequent assessment, one year later. These findings emphasize the importance of incorporating changing children’s prototypes of smokers and their perceptions of their friends’ prototypes in prevention programs.

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PA3-2  
MENTHOL CIGARETTES, NICOTINE DEPENDENCY, AND COTININE LEVELS IN ADOLESCENT SMOKERS

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Researchers have speculated that because menthol cigarettes feel less harsh, new smokers are more likely to inhale deeply and so increase the nicotine absorption. This study investigated this in two national youth surveys. Analysis of the National Youth Tobacco Survey (NYTS) found that the proportion of adolescents using menthol cigarettes has increased between 2000 and 2002. Compared to nonmenthol smokers, youth who smoke menthol cigarettes are show higher levels of nicotine dependency (controlling for demographic background, and the length and level of smoking) and are less likely to intend to quit. Analysis of a national biochemical validation survey of 5,500 14-19 year olds in 48 high schools assessed saliva cotinine. We present comparisons of cotinine levels between menthol and nonmenthol smokers. Analyses controlled for demographic background, the length, the recency, and the level of smoking. We discuss implications for youth prevention and cessation programs.

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PA3-3  
SMOKING TRAJECTORIES OF ADOLESCENT NOVICE SMOKERS IN A LONGITUDINAL STUDY OF TOBACCO USE

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There are few reports on the natural history of cigarette smoking in adolescents. We investigated developmental trajectories in smoking intensity in a sample of 369 Montreal school-children who initiated smoking during four years of follow-up. The generalized additive model (GAM) technique was employed to fit a series of non-parametric smoothing splines, which indicated that the overall smoking intensity trajectory followed an approximately quadratic curve. An individual growth curve model with three levels (survey, person, and school) was then fitted, revealing considerable between-subject heterogeneity in smoking intensity trajectories over time. Latent class growth analysis was then performed, with the results suggesting the existence of four distinct classes of smoking intensity trajectories: low-grade, non-progression smokers (68.4% of the sample), and slow, moderate, and rapid escalators (15.5%, 10.3%, and 5.8% of the sample, respectively), with each class characterized by a set of class-specific parameters. Classification of subjects into these four classes led to a considerable reduction in heterogeneity in smoking trajectories across subjects. Compared with low-grade smokers, subjects from escalating classes tended to perform worse academically, report more often students smoking at school, be less aware about school smoking rules, and have lower household income. Identification of distinctive smoking trajectories may help target cessation interventions to subjects with more risky smoking behavior and could enhance the effectiveness of efforts for prevention of nicotine dependence in adolescents and adults.

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PA3-4  YOUTH ACCESS TOBACCO POSSESSION, USE, AND PURCHASE LAWS: MEASURES OF STATE AND LOCAL ENFORCEMENT

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Despite recent increases in state-based legislation restricting minors’ possession, use, and purchase (PUP) of tobacco products, evaluation of state and local PUP enforcement efforts has been minimal. This study collected and analyzed state and local PUP enforcement data to develop enforcement indices. The state enforcement index (SEI) was developed from tobacco control key informant interviews in 45 states with at least one PUP law. SEI components include: enforcement level, resources, patterns, actions, citations, penalties, and publicity (maximum: 35 points). The local enforcement index (LEI) was developed from ImpacTeen key informant interviews with enforcement officials in 95 community sites for 2000 and 2001. LEI components include: community enforcement, priority, resources, patterns, actions, and parent notification (maximum: 15 points). Possession had the highest mean SEI in 2000 (mean = 8.25, SD = 7.28) and 2001 (mean = 8.90, SD = 7.56), while purchase had the lowest mean SEI for both years. Mean possession LEI scores were similar for 2000 (mean = 6.76, SD = 4.67) and 2001 (mean = 6.91, SD = 3.85). State and local possession enforcement scores were not highly or significantly correlated in 2000 (r = .24, p = .11) or 2001 (r = .15, p = .31). While state possession laws had the highest enforcement scores, there was no association between the strength of state and local possession enforcement. Enforcement measures will be applied to study the effects of state and local PUP enforcement on adolescent smoking behavior.

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PA3-6  PROJECT FLAVOR: ONE-YEAR OUTCOMES OF A MULTICULTURAL, SCHOOL-BASED SMOKING PREVENTION CURRICULUM FOR ADOLESCENTS

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Adolescent smoking prevalence in the U.S. varies by ethnicity, nationality, and acculturation. Despite the cultural diversity of many schools, few prevention programs have targeted multiple ethnic minority groups or compared culturally targeted curricula with untargeted curricula. This study evaluated the one-year outcomes of a multicultural smoking prevention curriculum that addressed smoking-related psychosocial concepts (e.g., social norms, refusal skills) with references to the values of multiple cultures (e.g., familialism, filial piety, saving face, fatalism). The multicultural curriculum was compared with a curriculum that addressed the same psychosocial risk factors without cultural references. Respondents were 1571 6th grade students attending 16 ethnically diverse middle schools in Southern California. Program effects on one-year smoking initiation among never-smokers were assessed. Among the 1430 6th grade never-smokers, 8% of those who received the multicultural intervention and 11% of those who received the standard intervention had tried smoking by 7th grade. Hispanic boys who received the multicultural curriculum were less likely to initiate smoking, relative to those who received the standard curriculum (adjusted odds ratio=0.49, 95% confidence interval=0.27, 0.88). Effects were nonsignificant among other groups. Teaching smoking prevention concepts in the context of the cultural values of multiple cultures appears to be a promising strategy for smoking prevention among Hispanic boys. Additional research is needed to determine the best strategies for preventing smoking among girls and other ethnic groups.

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PA3-5  SMOKING IN A COHORT OF YOUNG ADULTS: A TEN YEAR FOLLOW-UP

Linda L. Pederson*, John J. Koval, Stella Chan

The purpose of the study was to gain a better understanding of why some adolescents become smokers and others do not. In 1992, we began a longitudinal study on a cohort of grade 6 students (ages 11 and 12). This group of 1,614 students has been followed for ten years at three additional points in time: grade 8, grade 11 and last year as young adults (ages 21 and 22). For the first three data points, both longitudinal and cross sectional analyses reveal differences by gender, with males being more likely to smoke for social reasons and females more likely to smoke because of stress, issues of self esteem and lack of coping skills. Approximately 80% of the original cohort provided follow-up as young adults. Of 1,270 young adults (595 males, 675 females), 35.5% of the males and 30.4% of females smoked in the past 30 days, with 22.2% of males and 23.3% of females reporting quitting smoking, with the remainder being never or experimental smokers. Both cross sectional and longitudinal analyses reveal that demographic and psychosocial variables differ by smoking status and these relationships interact with gender. Prevention and cessation programs need to take account of these differences in their design, in order to be effective.

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PA3-7  TOBACCO USE AMONG YOUNG WOMEN, AGE 16-24: SMOKING CESATION NEEDS AND MYTHS

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Young adults are an increasingly important target for tobacco prevention and cessation programs, yet little is known about the smoking prevalence of young women ages 16-24. This study draws on 2002 Legacy Media Tracking Survey (LMTS) data to document smoking prevalence among young women and their experiences with quitting. One quarter of young women age 16-24 smoke in the U.S. Sixty-five percent (65%) of them said they were thinking of quitting within six months, and 83% believe they can quit if they want to. However, these young women may underestimate the power of nicotine addiction; of those who tried to quit in 2002, few succeeded. Young women struggle with quitting, and programs are needed to address the cessation needs of young women. Of those who tried to quit, 25% succeeded for more than a week but less than one month and 28% quit for one to six months. These findings suggest that women are struggling with nicotine addiction as early as their teens and early twenties. The LMTS is an American Legacy Foundation survey of youth and young adults ages 12-24. The survey is nationally representative and over samples for Hispanic, African American and Asian Pacific Islanders. The primary purpose of this random-digit dial survey is to track awareness of and reactions to Legacy’s anti-tobacco ads and other pro and anti-tobacco messages in the media. The survey also measures youth tobacco use and youth beliefs and attitudes about tobacco.

American Legacy Foundation.

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PA3-8

ARE TOBACCO INDUSTRY MARKETING EFFORTS IN BARS/CLUBS EFFECTIVE IN REACHING YOUNG ADULTS?

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There is concern that the tobacco industry has changed its marketing focus from adolescents to young adults (YA), in an effort to entice at-risk individuals to become and stay smokers. In 2002, 9,364 young adults (aged 18-29 years) were interviewed as part of the population-based California Tobacco Survey. Respondents answered questions about bar/club attendance and recall of tobacco advertising/promotions in these venues. Of smokers (18.3±9.9% [±95%CI] of the YA population), 86.8±2.5% of daily, 69.1±1.4% of social smokers (non-daily smokers who only smoke when others are smoking), and 61.1±4.9% of other non-daily smokers indicated they enjoyed smoking while drinking. One third (33.8±1.2%) of all YAs reported attending bars/clubs at least sometimes. Attendance was higher for smokers (50-55%), and for those at-risk to smoke (41-45%), compared to former and never smokers at lower risk to smoke (20-30%). Although smoking in bars/clubs in California has been illegal since 1998, 49.1±1.9% of bar/club attenders reported seeing someone smoking inside. Recall of tobacco advertising/promotions in bars/clubs was high (57.9±2.2%) among bar/club attenders, particularly among those who had seen someone smoking inside (64.9±2.7% vs. 51.2±3.2%). Being prepared to use a tobacco promotional item is an indicator of receptivity to tobacco marketing, and 17.4±2.9% of nonsmokers who were bar/club attenders compared to 9.7±1.1% of nonattendees indicated that they had or would use a tobacco promotional item. These data suggest that the tobacco industry is effectively using bars/clubs to reach at-risk YAs with their message to smoke and there is urgent need for tobacco control strategies to counter these efforts.

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PA4-1

[I-123]5-IA-85830 SPECT IMAGING OF THE NICOTINE-INDUCED UPREGULATION IN AGONIST BINDING TO BET2A NICOTINIC ACETYLCHOLINE RECEPTORS IN NONHUMAN PRIMATE BRAIN

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Chronic nicotine treatment in rodents causes a dose-dependent increase in high affinity nicotine binding to beta2-subunit containing nicotinic acetylcholine receptors (beta2-nAChR). Likewise, nicotinic agonist binding is increased in postmortem brain of human smokers. In the present study, nicotine induced upregulation of nicotine binding sites was studied using SPECT and the beta2-nAChR agonist radiotracer [I-123]5-IA-85830 ([I-123]5-IA) in nonhuman primates allowed unlimited access to oral nicotine for 6-8 weeks (wk). Two male rhesus macaques each participated in four [I-123]5-IA SPECT scans; including two prior to oral nicotine; one after 6wk of oral nicotine and 1-2 days withdrawal (6wk/1d; 6wk/2d) and one after 8 weeks oral nicotine and 7 days withdrawal (8wk/7d). Compared to baseline, regional [I-123]5-IA uptake was decreased 45-70% after 6wk/1d and 35-60% after 6 wk/2d (nicotine treatment/withdrawal, respectively). In contrast, after 8wk/7d, regional [I-123]5-IA uptake was increased by 60-250%. Urinary cotinine levels were elevated for up to 3 d after the last exposure to nicotine and gradually decreased to low levels by 7 d withdrawal suggesting that the decreased [I-123]5-IA uptake following 6 wks oral nicotine and 1-2 d withdrawal was due to competition with residual nicotine. These findings demonstrate that the nicotine-induced upregulation in nicotine agonist binding can be measured using [I-123]5-IA SPECT and that approximately 7 d are required for nicotine and cotinine to clear so that binding is not confounded. Thus human smokers will need to abstain for about one week to reliably measure the nicotinic agonist site on the beta2-nAChR.

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PA4-2

SMOKING ALTERS THE EXPRESSION OF IMMUNE COMPLEX AND POSTSYNAPTIC DENSITY GENES: AN OLGONUCLEOTIDE ARRAY ANALYSIS IN SCHIZOPHRENICS AND NON-MENTALLY ILL SUBJECTS

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Schizophrenia is associated with a high rate of chronic, heavy smoking. Nicotine, the major psychoactive component of cigarette smoke, differentially regulates the neuronal nicotinic receptor levels in schizophrenics, compared to controls. Schizophrenic patients and control subjects also exhibit disparate responses to smoking on sensory processing and visuospatial working memory tasks. The goals of the current study were to identify functionally related genes that are differentially expressed between postmortem hippocampal tissues of smokers and nonsmokers, independent of psychopathology, and to identify transcripts that are differentially associated with smoking in schizophrenics, compared to non-mentally ill subjects. The hippocampus was selected for analysis as this region is involved in nicotine-related cognitive and sensory processing measures that are aberrant in schizophrenia. Microarray expression profiles were similar in controls and schizophrenic subjects for many genes affected by smoking. However, expression of a subset of genes was differentially associated with smoking in schizophrenics and controls, including genes of the NMDA post-synaptic density (NMDA PSD) and the immune complex, biological systems that were strongly affected by tobacco use independent of psychopathology. Quantitative RT-PCR confirmed the differential expression of NMDA PSD and immune complex transcripts. The present findings suggest that smoking may differentially modulate gene expression in schizophrenic patients and control subjects. The neuroadaptive mechanisms underlying chronic tobacco use are likely to differ substantially between these two groups.

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Schizophrenic patients exhibit deficits in neuropsychological test performance, and in sensorimotor gating, as assessed by pre-pulse inhibition (PPI) of the startle response. Studies in non-psychiatric controls suggest that cigarette smoking can improve, and smoking abstinence may impair PPI. The present study examined the effects of acute smoking abstinence and reinstatement on PPI in smokers with schizophrenia and matched non-psychiatric controls, and the effects of pre-treatment with the high-affinity nAChR antagonist mecamylamine (MEC; Inversine®). Schizophrenic and control smokers were studied during three weekly test sessions separated by at least one week, and PPI procedures were performed during an ad lib smoking session, after overnight smoking abstinence and after smoking reinstatement. MEC was given as a 3-day co-treatment, and dispensed in a randomized, counterbalanced order (0.0, 5.0 and 10.0 mg/day) in BID dosing. In our preliminary analyses, PPI at smoking baseline in the placebo condition (0.0 mg/day) was slightly but non-significantly reduced in schizophrenics (n=8) versus controls (n=6), Overnight (~12 hours) smoking abstinence significantly reduced PPI in schizophrenics (p<0.01), with minimal reduction in controls; smoking reinstatement robustly reversed abstinence-induced PPI deficits in schizophrenics, with little effect on PPI in controls. Significant 3-way interactions (Diagnosis x Study Session x Medication Dose) for PPI were observed (p<0.01). Enhancement of PPI by smoking reinstatement in schizophrenics was dose-dependently blocked by MEC. These results suggest that: 1) PPI deficits commonly reported in schizophrenic subjects are minimized when PPI is recorded during non-deprivation conditions; 2) PPI is robustly impaired by acute smoking abstinence in schizophrenics versus controls, and; 3) enhancement of PPI by acute smoking is mediated by stimulation of high-affinity nAChRs. These findings may contribute to understanding vulnerability to smoking in schizophrenia, and for the development of nicotinic receptor-based pharmacotherapies for neurocognitive deficits and nicotine dependence in schizophrenic disorders.

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PA4-5

GREATER CORTICAL ACTIVATION DURING PERFORMANCE OF A WORKING MEMORY TASK BY SMOKERS THAN NONSMokers

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We used fMRI to examine interactions between nicotine dependence and working memory by testing smokers and nonsmokers (n = Bgroup) performing the N-Back task. On one test day, smoking was allowed up to 1-2 h before fMRI; on the other, smokers had abstained for 14-16 h. Data were acquired on a 3-T GE scanner (asymmetric spin echo, TR=3000 ms, gradient-recalled echo at 70 ms). Using SPM 99, we tested six cortical areas: anterior cingulate (ACC), mid-cingulate (MCC), posterior cingulate (PCC), inferior frontal (IFG), dorsolateral prefrontal (DLPFC), and parietal (PRC). Both groups exhibited significant task-related activity in bilateral DLPFC, IFG and PRC in 2-back and 3-back conditions (minus 0-back). In the 1-back condition, nonsmokers had activation only in left IFG and right PRC whereas abstinent smokers showed activation in bilateral ACC, MCC, DLPFC, IFG, and PRC. Nonsmokers showed deactivation in bilateral ACC, left PCC and left DLPFC in 1-back and 2-back conditions; and in bilateral ACC, MCC, PCC, and DLPFC in the 3-back condition. Smokers, however, showed no deactivation in ACC, PCC, and DLPFC in 2-back and 3-back conditions on either test day. These observations suggest that smokers have less efficient response to cognitive challenge than nonsmokers and/or they have brain activity that interferes with working memory performance.

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SMOKING CUE-REACTIVITY IN SCHIZOPHRENIA: EFFECTS OF A NICOTINIC RECEPTOR ANTAGONIST


The rates of cigarette smoking among individuals with schizophrenia in clinical populations are high (58-88%) compared to rates in the general population (<25%). This study proposed to investigate the hypothesis that high rates of smoking among schizophrenic patients may be due, in part, to abnormalities in drug reward and craving systems by assessing the role of nicotinic receptors on smoking cue reactivity (CR). In this study smoking CR in both schizophrenic and non-psychiatric control smokers were compared across three stages of smoking deprivation: 0 minutes smoking abstinence (no deprivation), 45 minutes abstinence, and overnight (~16 hours) abstinence. Three doses of the nicotinic acetylcholine receptor (nAChR) antagonist mecamylamine (MEC; 0.0, 5.0 and 10.0 mg/day) were administered during three separate test weeks to determine the role of these receptors in mediating the smoking CR response. Six out of 10 (60%) schizophrenic smokers and 6/11 (54.5%) control smokers demonstrated reactivity to smoking cues at baseline. In the placebo condition (0.0 mg/day) the magnitude of smoking CR was not significantly different between schizophrenic and control smokers (p=0.46). Baseline urges to smoke (UTS) were also similar between schizophrenics and controls, and baseline UTS was not altered by MEC pre-treatment. In the schizophrenic group, pre-treatment with MEC significantly reduced CR [F=3.69, df=2,17, p<0.05], with significant post-hoc differences at the 5.0 mg/day dose (p<0.03) and 10.0 mg/day (p<0.05) compared to placebo (0.0 mg/day). In contrast, MEC pre-treatment in control smokers did not reduce CR [F=3.0, df=2,17, p=0.74]. These findings suggest that although smoking CR is similar in non-deprived schizophrenics and controls, MEC pre-treatment leads to a more robust suppression of smoking CR in schizophrenics versus controls. These results may relate to reduced high-affinity nAChR levels observed in the schizophrenic brain.

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SMOKING-CUE-ELICITED CRAVING AND QUIT VARIABLES

Joel Erblich* and Dana Bovbjerg

Smokers experience strong cigarette craving reactions in response to cigarette cues (e.g., the sight of their brand), and some research suggests that individuals with greater craving reactions to such cues experience greater difficulty quitting. Women have also been reported to experience greater difficulty quitting than men and are less responsive to pharmacotherapies. Lacking in the literature are investigations of possible gender differences in cue-elicited craving and its relationship to quit success. To this end, we exposed male (n=84) and female (n=119) daily smokers (mean age=27) and diathesis for disordered eating (high-risk vs. low-risk). Participants (mean age 31.3 years; FTND 4.3; smoking rate 18.7 cigarettes/day) completed two sessions, one after ad libitum smoking; the other after two days' abstinence, in counter-balanced order. After a half-day's restricted eating, participants watched a video, with measured amounts of pre-selected preferred food available throughout. Cigarettes were available during the ad libitum smoking session. The difference between pre-seshion weight after ad libitum smoking versus abstinence was significantly greater for high-risk women (p<0.05) and marginally greater for overweight women (p<0.10) than for their low-BMI and low-risk counterparts. Pre-session craving for cigarettes was magnified during the abstinence session in high-BMI women (p<0.05), with a significant BMI group x risk group x session interaction (p<0.05). Caloric intake was marginally attenuated during abstinence for low-BMI compared with high-BMI participants (p<0.10), an effect primarily accounted for by differences in protein intake (p<0.10). These findings suggest that low-BMI women may be less prone to weight gain during early abstinence, possibly because they compensate for metabolic changes induced by nicotine washout. Elevated craving in high-BMI women during abstinence under conditions of food deprivation, especially if they are also at high-risk for maladaptive eating, may contribute to difficulty quitting in these women.

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PA5-3
PREDICTORS OF SMOKING CESSION IN SCHIZOPHRENIA: ANALYSIS OF DATA FROM THREE SEQUENTIAL CONTROLLED CLINICAL TRIALS

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Our group at Yale University has conducted three sequential controlled clinical trials (1998-present) for smoking cessation in patients with schizophrenia and co-morbid affective disorder. The purpose of the current study was to determine the characteristics that predict smoking cessation treatment outcome among the 108 patients who have completed these trials to date. The individual sequential trials were of 10 weeks duration. All included weekly group therapy emphasizing MET, CBT social skills training and psychoeducation, augmented by pharmaceutical interventions including: 1) Open-label transdermal nicotine patch (TNP, 21 mg/24h; n=45, George, T.P. et al., 2000. Am. J. Psychiatry. 157: 1835-1842); 2) Sustained-release bupropion (BUP) vs. placebo (PLO) (n=32; George, T.P. et al., 2002. Biol. Psychiatry. 52: S3-61); 3) combination of TNP (21 mg/24h) with either BUP or PLO (n=32, NIDA-funded R01 study in progress 9/1/01-8/31/03, with enrollment target of n=100). Quit rates in the three studies were 35.6%, 31.3% and 25.0% respectively Logistic regression analysis was used to predict abstinence at the end-of-treatment (EOT) from the following: age, race, gender, baseline cigarettes per day, depressive symptoms, negative symptoms, degree of nicotine dependence, class of antipsychotic medication, and psychiatric diagnosis. Controlling for differences among studies in EOT quit rates, the strongest predictors of EOT abstinence were low nicotine dependence and atypical antipsychotic medication (e.g., clozapine). Our findings suggest that atypical antipsychotic treatment could serve as the focus for tailored interventions for the treatment of nicotine dependence in this vulnerable subpopulation of smokers.

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PA5-4
RANDOMIZED CONTROL TRIAL OF NICOTINE PATCH AND COGNITIVE BEHAVIORAL THERAPY AMONG SMOKERS WITH PSYCHOTIC ILLNESS


BACKGROUND: Prevalence of smoking among people with schizophrenia is much greater than in the general population (90% vs 23%). Smoking related diseases rate second in frequency to suicide as the greatest contributor to early mortality among people with schizophrenia.

AIM: To evaluate the effectiveness of Nicotine Replacement Therapy (NRT) and Cognitive-Behavior Therapy (CBT) in producing smoking cessation among this high risk population. Methodology This a multi-centre study conducted in Sydney and Newcastle and includes people with a psychotic illness with dependence on tobacco. 298 participants were randomly assigned to an 8-session intervention or usual treatment. Blind follow-up assessments have been completed for 3 and 6 months post-treatment and 12 months follow up will be completed in September. Self reports of abstinence were biochemically validated using expired CO.

RESULTS: Significantly more people in the treatment group were abstinent at 3 months compared to the control group (point prevalence is 17% vs 8%, p<0.05; continuous abstinence is 13% vs 6%, p=0.07). At 6 months point prevalence was 13% in the treatment group compared to 7% in control (not significant); and continuous abstinence was 10% vs 7% (NS). Among the continuing smokers at 3 months, there was a significant decline in nicotine dependence scores based on the Fagerstrom Tolerance Questionnaire for those in the treatment group (from 8 to 5) compared to placebo (from 8 to 6.5), but these differences had extinguished by 6 months. Follow up rates at 3 and 6 months were 87% and 76%.

CONCLUSIONS: NRT and CBT is effective among people with a comorbid psychotic illness and tobacco dependence as indicated by the point prevalence and continuous abstinence results at 3 months.

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PA5-5
IMPACT OF NICOTINE WITHDRAWAL ON AN ADULT INPATIENT PSYCHIATRY UNIT

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This study examined evidence of nicotine withdrawal and its treatment among psychiatric inpatients on a smoke-free unit. The medical charts of 250 psychiatric patients admitted from November 1998 through December 2001 were randomly selected and systematically reviewed. One hundred five patients were identified as current smokers, averaging 1.1 (SD=0.7) packs per day. Smoking rates were highest among patients who were younger, never married, reported current substance use, or were diagnosed with bipolar disorder. Current smokers evidenced greater nicotine withdrawal symptoms, including greater agitation and irritability (p<0.05). None of the patients, however, had a chart diagnosis of Nicotine Dependence or Withdrawal, and smoking status was never included on the master treatment plan. Nicotine replacement therapy (NRT) was prescribed for 56% of current smokers and when prescribed, 91% of patients used it. Patients not prescribed NRT were more likely to be discharged from the hospital against medical advice (22%) compared to nonsmokers (8%) and smokers who were prescribed NRT (10%) (p<0.05). Based on chart documentation, only 1% of smokers were encouraged to quit, referred for cessation treatment, or provided NRT on discharge. Psychiatric inpatients who smoke appear at risk for nicotine withdrawal during smoke-free hospital stays and when left unaddressed, psychiatric care may be compromised. Areas to target for intervention will be discussed, including diagnosis and treatment planning, on-unit smoking cessation counseling, NRT use, and post-discharge referrals.

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PA5-6
IMMEDIATE ANTECEDENTS OF CIGARETTE SMOKING IN SMOKERS WITH AND WITHOUT POSTTRAUMATIC STRESS DISORDER


The present study investigated the association between smoking and situational cues in smokers with and without posttraumatic stress disorder (PTSD). Using ambulatory monitoring methods, 112 smokers (77 PTSD and 35 non-PTSD) monitored ad lib smoking for one day, and recorded each cigarette in a diary. Compared to non-PTSD smokers, PTSD smokers reported greater negative affect and more PTSD symptoms during the day. Generalized estimating equations contrasted 85 smoking and 508 nonsmoking situations by group status. In both PTSD and non-PTSD smokers smoking was strongly related to smoking craving, being outside, not being at home and not being at with family and being in the presence of others’ smoking. In PTSD smokers, negative affect, PTSD symptoms, restlessness, and worry also served as significant antecedents. In non-PTSD smokers, additional significant antecedent variables for smoking being alone. Taken together, these results are consistent with previous ambulatory findings in PTSD smokers regarding mood, but underscore that in certain populations, mood and symptom variables exert significant influence over ad lib smoking.

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We examined the causal nature and direction of the relationship between TD, trauma exposure, and PTSD. Data were obtained from 3,372 male-female twin pair members of the national Vietnam Era Twin Registry, who served in the military and were interviewed in 1991-1992. Rates of TD, PTSD, and trauma exposure were assessed using the NIMH Diagnostic Interview Schedule for the DSM III-R. The prevalence of TD was elevated among the trauma exposed and those with PTSD as compared with those unexposed. Using survival analysis with time dependent covariates, trauma (HR=1.49; 95% CI=1.37,1.62) and PTSD (HR=1.83; 95% CI=1.58,2.13) significantly predicted TD in unadjusted analyses. The association remained significant for both trauma exposure (HR=1.27; 95% CI=1.13,1.42) and PTSD (HR=1.46; 95% CI=1.19,1.78) after controlling for parental education, parental psychopathology, military service characteristics, and other psychiatric disorders (major depression, substance abuse/dependence, conduct disorder). TD did not increase risk of trauma exposure (HR=0.91; 95% CI=0.79,1.44) but increased vulnerability to PTSD (HR=1.44; 95% CI=1.13,1.84) among the exposed. Comorbid psychiatric disorders only partially mediated the association between TD and trauma exposure/PTSD. The association between TD, trauma exposure, and PTSD was not explained by shared genetic vulnerability. The association between TD and trauma exposure/PTSD and TD appears to be causal and was not accounted for by comorbidity or shared familial/genetic vulnerability.

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Cigarette smoking has been linked to psychiatric disorders, especially major depression. A recent epidemiologic study has reported a positive association between smoking and suicide among white men. However, no information was available on major depression as a potential mediator of the smoking-suicide association. This study examined the relationship between smoking and incidence of suicidal thought and attempts, using prospective data and controlling for history of major depression and substance use disorders. Methods: Data come from an epidemiologic study of young adults in Southeast Michigan (n=1007), with follow-up assessments at 2, 5 and 10-years. Response rate across all waves was greater than 90%.

Psychiatric disorders were assessed using the NIMH-DIS for DSM-III-R. The 10-year incidence of suicidal thoughts and attempts in persons who smoked daily at baseline were estimated in logistic regressions: never smoked daily was the reference. Results: During the 10-year follow-up, the incidence of suicidal thoughts was 19.9% vs. 10.8% and of suicide attempts, 4.5% vs. 0.6% in daily smokers vs. non daily smokers, respectively. Unadjusted odds ratio for suicidal thoughts in nicotine dependent smokers was 2.6 (p<0.05) and in non-dependent daily smokers 1.2 (ns). Odds ratio adjusted for sex, history of major depression, alcohol and drug use disorder in nicotine dependent smokers was 2.2 (p<0.05). Unadjusted odds ratio for first suicide attempts during the follow-up period in persons with history of daily smoking was 8.6 (p<0.05). Adjusted odds ratio, controlling for history of depression, alcohol and drug use disorder was 9.1 (p<0.05). Conclusions: Daily smoking and nicotine dependence might influence the risk for suicidality, independent of major depression and substance use disorders. The association might be related to lower brain serotonin function in smokers. However, a causal relationship cannot be inferred.

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**PA6-3**

**BRAND SWITCHING, SWITCHING TO LOW-TAR CIGARETTES, AND THE EFFECT ON FUTURE SMOKING CESSATION**


**OBJECTIVE:** To examine the relationship between brand switching, switching to a lower tar yield cigarette and future cessation.

**METHODS:** A total of 6,603 persons who participated in the COMMIT study and completed detailed tobacco use telephone surveys in 1988, 1993, and 2001 are included in this analysis. People were asked which brand they smoked and brand characteristics in each survey, which was used to assess brand switching.

**RESULTS:** Among smokers in 1988, 25% of subjects reported smoking a different brand in 2001, while 51% quit and 24% reported smoking the same brand. Those people who switched brands were more likely to be female, white, have a lower income, and have tried to quit in the past. Among the 10 leading brands, 9 had a greater percentage of smokers quit than continue smoking the same brand in 1988 and 2001, and discount and generic cigarettes were the only brands to attract more switchers than lose smokers who switched away from those brands. Those who switched brands had slightly lower quit rates with the strongest association observed among those who reported switching to low tar cigarettes as a quit method where quit rates were about half of those observed among people who tried to quit using other methods.

**CONCLUSIONS:** Overall brand switching rates were low compared to overall quitting rates. Brand switching may decrease the likelihood of future cessation.

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**PA6-4**

**SAFETY OF A NICOTINE REDUCTION STRATEGY**

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Benowitz and Heningfield proposed that progressive reduction of the nicotine content of cigarette tobacco might reduce nicotine dependence in the population and ultimately result in transition to nonaddictive cigarettes. Concern has been raised that smokers, attempting to maintain nicotine intake, will oversmoke reduced nicotine cigarettes, resulting in greater exposure to tobacco smoke toxins and potentially a higher risk of smoking-related disease. To examine the feasibility of nicotine reduction, we studied 20 smokers who were provided with their usual brand, then research cigarettes containing 12 mg, 8 mg, 4 mg, 2 mg, and 1 mg nicotine per rod, each for one week. Nicotine intake as well as exposure to carbon monoxide and the tobacco specific nitrosamine NNAL (a tobacco carcinogen) were assessed at each dose level. Over the course of tapering, plasma cotinine levels progressively decreased (average 69%). Cigarette consumption, carbon monoxide, and NNAL levels did not change, indicating no increase in exposure to tobacco smoke combustion products. At follow-up, two and four weeks after subjects had the option of returning to smoking their own brand of cigarettes, cigarette consumption as well as cotinine and CO levels remained lower than at baseline. Our observations are consistent with the idea that the level of nicotine dependence may be reduced by progressive reduction of nicotine content of cigarettes. Progressive reduction of nicotine intake is feasible, and compensatory smoking to the extent that toxic exposures are increased does not occur. A nicotine reduction strategy as a regulatory approach deserves further consideration.

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**PA6-5**

**SMOKELESS TOBACCO AND CIGARETTES: GATEWAYS, CAUSAL PATHWAYS, AND HARM REDUCTION**

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Several articles claim to demonstrate that smokeless tobacco (ST) is a substantial “gateway” to cigarette smoking; other articles have disputed this. Largely absent from the discussion is a clear examination of what actually constitutes a gateway. For the concept to have force, it must refer to situations where the use of ST is a necessary cause of someone’s later use of cigarettes. Using causal modeling methods from epidemiology, I characterize conditions where this would be the case and what we would expect to observe. This causal modeling clearly illustrates the scenarios where ST use causes subsequent smoking, where ST is an "exit gate" from smoking, and where serial use involves no necessary causality. A review of the gateway studies from this perspective shows that the evidence better supports the claim that there are people who are particularly likely to use tobacco and switch between different forms, rather than the claim that one form of tobacco is a gateway to another. This suggests that there is a subpopulation of smokers who might be amenable to the harm reducing behavior of switching to ST use. The question of a gateway is important because the direct health risk from ST is so small compared to cigarettes that a gateway to smoking, if it does exist, would probably lead to most of the total health effects of ST use. If such a gateway exists, it would likely be reduced if ST users knew that smoking was immensely more dangerous. Similarly, that knowledge might encourage certain smokers to use ST as an exit gate.

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**PA6-6**

**SMOKELESS TOBACCO DOES NOT PREVENT SMOKING AND IS RARELY USED FOR CESSATION**

Scott L. Tomar, D.M.D., Dr.P.H.*, Michael Loree, M.A.

Kozlowski et al.’s study on smokeless tobacco (SLT) and cigarette use among US men age 23–34 in 1987 [Addiction 2003;98:1077–85] concluded “SLT may be more likely to prevent smoking than to cause it,” based on questionable methods and interpretations. This study examined: (1) SLT use as a predictor for smoking; (2) the 13-year change in smoking prevalence among that birth cohort and use of ST to quit; and (3) recent tobacco use trends among young males. Data were from 1987 and 2000 National Health Interview Surveys and 1997–2002 Monitoring the Future Project. White males who used SLT by age 15 but never smoked were more likely than non-users to become smokers (OR=1.80; 95% CI: 1.15, 2.82), adjusted for age, region, and education. Results were similar for age 16 (OR=1.53; 95% CI: 1.03, 2.30) or age 17 (OR=1.87; 95% CI: 1.17, 2.98). In 1987, 21.3% (SE=1.70) of white male current smokers and 11.2% (SE=1.02) of never-smokers age 23–34 had used SLT. Current smoking in this birth cohort declined from 34.1% (SE=1.12) in 1987 to 31.0% (SE=0.96) in 2000; current snuff use declined from 5.8% (SE=0.59) to 2.5% (SE=0.29). Just 1.2% (SE=0.56) of male former smokers age 36–47 in 2000 reported switching to ST to quit smoking. Daily smoking among male high school seniors declined from 24.8% in 1997 to 17.2% in 2002; daily SLT use declined from 8.6% to 4.3%. In conclusion, Kozlowski et al.’s “preventive” effect was an ecologic fallacy. SLT use was a significant predictor of smoking, SLT use was substantial in their study population but rarely was used to quit smoking, and SLT and cigarette use are now declining simultaneously.

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PA6-7

MOST SMOKELESS TOBACCO USE DOES NOT CAUSE CIGARETTE SMOKING: RESULTS FROM THE 2000 NATIONAL HOUSEHOLD SURVEY ON DRUG ABUSE

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Those who either never progress from SLT to smoking or smoking before using SLT logically cannot have smoking caused by SLT use. The prevalence of such use permits strong inferences about the overall importance of potential causal effects of SLT on cigarette smoking. We found that the majority (66%) of male ever users of SLT aged 22 to 34 in the 2000 National Household Survey on Drug Abuse were non-causal users. That is, they either 1) never smoked or 2) smoked before they used SLT.

For these individuals, SLT use cannot have caused them to smoke. We also compared our results in 2000 to a similar National Health Interview Survey sample from 1987. Comparison was limited to current SLT users only due to differences in ever-use definitions. Potentially causal uses of SLT were in the minority, and had not increased significantly over time (24% in 1987 to 29% in 2000, p<0.05). Logistic models showed that, when non-causal users were removed, SLT was a minor predictor (ORs <2) of current smoking. This is likely due to linked experimentation rather than a true causal effect. We argue that the majority of SLT use cannot cause smoking, such that SLT effects on smoking initiation are minimal at best. Policy implications of these findings are discussed.

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PA6-8

TOBACCO HARM REDUCTION: SHARED AND CONTRASTING OPINIONS OF THE “GRASSROOTS” TOBACCO CONTROL COMMUNITY AND NATIONAL AND INTERNATIONAL EXPERTS

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In fall 2002 we examined opinions about “tobacco harm reduction” (THR) held by the broad tobacco control community in America and by leading experts on the subject. A mixed-method Web-issued survey was sent to the 2833 U.S.-based registrants for the 2001 National Conference on Tobacco or Health and was completed by 67.1% of eligible respondents. Semi-structured interviews were conducted with 29 prominent tobacco control advocates, pharmaceutical and tobacco industry scientists/officials, non-industry scientists, and Congressional staff, all knowledgeable about THR (hereafter, the “experts”). The experts all considered THR a central and controversial issue within the field of tobacco control. In contrast, 30% of the “grassroots” survey respondents were unaware of THR and only 5% believed that THR currently receives a great deal of attention. Both groups believe that THR will gain in importance in the coming years and that it poses significant threats to tobacco control. Most survey respondents expect THR ultimately to have adverse effects on health, while the experts were less certain. Both groups supported recommending sustained use of nicotine patches and gum as an alternative to smoking for inveterate cigarette smokers. Survey respondents overwhelmingly (? 90%) disapproved of sustained use of any tobacco product as an alternative to smoking. In contrast, the experts were roughly evenly divided on whether smokeless tobacco should be so recommended. Experts and the grassroots community need to communicate more effectively about how to address this challenging issue.

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PA7-1

EVIDENCE FOR DUAL ACTIONS OF NICOTINE ON REINFORCED BEHAVIOR


Recent data suggest the hypothesis that nicotine (NIC) supports operant behavior by acting as a mild primary reinforcer when contingently related to the behavior, and by enhancing responding for other reinforcing stimuli when both the behavior and stimuli are independent of NIC delivery (noncontingent). To test this hypothesis, we compared dose-response functions for the effects of contingent and noncontingent NIC. Male rats responded for a reinforcing visual stimulus (VS) when NIC was either paired with the VS (contingent) or unrelated to the VS (noncontingent). Responding for contingent and noncontingent NIC was indistinguishable at the three largest doses, but was higher for contingent NIC at 0.01 mg/kg/Inf. Next, we evaluated the relative contributions of contingent NIC and the VS to behavior by allowing rats to control NIC and the VS independently. Animals were trained to press two levers equally for food reward. After training, pressing one lever resulted in NIC (0.06 mg/kg/Inf) while pressing the other resulted in the VS. Rats took approximately the same number of NIC infusions that they would typically take if only NIC were available (Mean = 7). In contrast, the number of VS presentations approached that produced in other experiments when both NIC and VS were controlled by the same lever (Mean = 20). These data suggest that the high rates of responding normally seen for NIC SA reflect increased motivation for the VS engendered by the intake of a relatively small amount of NIC, which is sufficient to sustain both the primary reinforcing and reinforcement-enhancing effects of the drug.

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PA7-2

NICOTINE DEPENDENCE IN ADULT AND ADOLESCENT RATS

Laura E. O’Dell*, Adrie Bruijnzeel, Sandy Ghozland, Glenn R. Valdez, Athina Markou, and George F. Koob

Recent data suggest that nicotine (NIC) supports operant behavior by acting as a mild primary reinforcer when contingently related to the behavior, and by enhancing responding for other reinforcing stimuli when both the behavior and stimuli are independent of NIC delivery (noncontingent). To test this hypothesis, we compared dose-response functions for the effects of contingent and noncontingent NIC. Male rats responded for a reinforcing visual stimulus (VS) when NIC was either paired with the VS (contingent) or unrelated to the VS (noncontingent). Responding for contingent and noncontingent NIC was indistinguishable at the three largest doses, but was higher for contingent NIC at 0.01 mg/kg/Inf. Next, we evaluated the relative contributions of contingent NIC and the VS to behavior by allowing rats to control NIC and the VS independently. Animals were trained to press two levers equally for food reward. After training, pressing one lever resulted in NIC (0.06 mg/kg/Inf) while pressing the other resulted in the VS. Rats took approximately the same number of NIC infusions that they would typically take if only NIC were available (Mean = 7). In contrast, the number of VS presentations approached that produced in other experiments when both NIC and VS were controlled by the same lever (Mean = 20). These data suggest that the high rates of responding normally seen for NIC SA reflect increased motivation for the VS engendered by the intake of a relatively small amount of NIC, which is sufficient to sustain both the primary reinforcing and reinforcement-enhancing effects of the drug.

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PA7-3

NICOTINE ABSTINENCE SYNDROME IN RATS DEPENDS ON FORM OF NICOTINE

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Malin and colleagues have developed a rat model of nicotine abstinence syndrome based upon behavioral observations following 7 days of continuous subcutaneous infusion of nicotine hydrogyn tartrate via an osmotic minipump. Maximal abstinence-related behaviors occur 18-22h post-minipump withdrawal. The model has been replicated using nicotine hydrogyn tartrate, but there are no reports using nicotine dihydrochloride, a nicotine-based salt frequently used in rodent studies. The present research examined abstinence-related behaviors in adult male Sprague Dawley rats that received 7 days of continuous SC infusion with saline, 3.16 mg/kg nicotine dihydrochloride, or 3.16 mg/kg nicotine hydrogyn tartrate (expressed as base). Behavioral observations were made at baseline, during nicotine infusion, and 20 hours post-minipump removal. Abstinence-related behaviors were similar for all groups during baseline and nicotine infusion. In withdrawal, rats treated with nicotine hydrogyn tartrate displayed significantly more abstinence-related behaviors than rats treated with saline, consistent with previous findings. There were no differences in abstinence-related behaviors in rats treated with nicotine dihydrochloride versus saline during withdrawal. Although both nicotine groups received equivalent amounts of nicotine base, only animals previously treated with nicotine hydrogyn tartrate displayed significantly more abstinence behaviors than did controls. Our findings are consistent with a recent study that the severity of the abstinence syndrome in this model is affected by characteristics of the drug exposure regimen. Possible mechanisms for these differences are discussed.

This study was supported by funds from Wyeth Research.

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PA7-5

INVESTIGATION OF THE LINKAGE OF TWO CYP2A6 VARIANTS (CYP2A6*2 AND CYP2A6*9)

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The human CYP2A6 enzyme metabolizes nicotine to the inactive metabolite cotinine. Nicotine is the psychoactive substance responsible for establishing and maintaining cigarette dependence; thus the CYP2A6 gene has received considerable attention as a genetic factor in smoking. Over 16 variant CYP2A6 alleles have been identified. Large interindividual differences in nicotine metabolism exist; the kinetics of nicotine metabolism are altered in individuals carrying the variant CYP2A6 alleles. While genotyping 281 adolescent individuals for the CYP2A6 gene, we observed an unusual high co-occurrence of two existing CYP2A6 alleles (CYP2A6*2 and CYP2A6*9). CYP2A6*2 is an inactive allele, having no enzymatic activity, while CYP2A6*9 is another defective allele, having enzymatic activity reduced by 50%. Enzyme kinetics would be different depending on whether the two variants occur on the same or different chromosomes (~50% and ~75% reduction respectively, relative to individuals with a *1/*1 genotype). Although the current genotyping methods reliably detect the presence of CYP2A6*2 and CYP2A6*9 in an individual, they do not distinguish the two genetic/kinetic possibilities. Thus, we developed a haplotyping method that detects linkage of the two variants; this was subsequently confirmed by sequencing. None of the compound heterozygotes contained variants that were co-expressed in the same allele as haplotypes, indicating that the two variants may not be associated as a novel allele but rather occur on alternative alleles resulting in the *2/*9 genotype and have an estimated 75% reduction in nicotine metabolism.

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PA7-4

GENETIC VARIATION IN CYP2A6 ALTERS NICOTINE PLASMA LEVELS IN SUBJECTS TREATED WITH NICOTINE PATCH

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Variation in rates of nicotine metabolism may significantly alter nicotine plasma levels in individuals treated with nicotine replacement therapies. Nicotine metabolism in humans is mediated predominantly by the genetically variable enzyme CYP2A6. Smokers (N=197) in a smoking cessation trial were treated daily with nicotine patch (21 mg) and assessed after 1 week. DNA was also obtained and *1x2, *2, *4, *7, and *9 CYP2A6 genetic variants were determined. In individuals with verified abstinence after one week of treatment (N=166), those with decreased activity CYP2A6 genotypes (N=24, CYP2A6 *2, *7, *9, no *4 was found) had 35% higher nicotine plasma levels (2.3ng/ml versus 1.7ng/ml, p=0.02) compared to those with normal metabolism (CYP2A6*1/*1, N=142). A similar trend was seen in those who were not abstinent (23.3ng/ml versus 18.6ng/ml N=23, p=0.06). Among the abstinent participants, each of the decreased activity genotypes were associated with altered plasma levels. Compared to the CYP2A6*1/*1 genotype (17.3ng/ml, N=142) those with genotypes consisting of CYP2A6*1/*7 (17.9ng/ml, N=1), CYP2A6*1/*9 (24.0ng/ml, N=19), CYP2A6*1/*2 (20.9ng/ml, N=3) and CYP2A6*2/*9 (23.9ng/ml, N=1) had higher nicotine plasma levels, while one individual with the CYP2A6*1/*1x2 genotype duplication had lower nicotine plasma level (16.6ng/ml). These data provide the first evidence that genetic variation in CYP2A6 causes substantial differences in nicotine plasma levels following systemic delivery (NRT patch) and that this may also result in differences in cessation rates.

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PA7-6

GENETICALLY DECREASED CYP2A6 AND THE RISK OF TOBACCO DEPENDENCE: A PROSPECTIVE STUDY OF NOVICE SMOKERS


Case control studies in adults suggest that defective alleles in the gene that codes for the hepatic cytochrome P4502A6 (CYP2A6) protect against nicotine dependence (ND) and higher levels of cigarette consumption. We tested these two hypotheses in young adolescents. Self-reports of tobacco use and ND symptoms were collected every 3-4 months from 1293 grade 7 students. We analyzed 281 smokers with genetic data; those who were not already tobacco dependent and who had inhaled (n=228) were followed 29.9 months on average, until they became dependent or were censored. The association between metabolic activity, represented by CYP2A6 genotype, and conversion to dependence was analyzed using Cox’s proportional hazards model. Sixty-seven subjects (29.4%) became dependent. Relative to CYP2A6*1/*1, having 1-2 copies of the inactive CYP2A6*2 or *4 variant was a strong risk factor for developing dependence (hazard ratio (95% confidence interval) = 2.8(1.3-6.3). Subjects with 1-2 partially inactive CYP2A6*9 or *12 variants were not at increased risk. Mean past-week cigarette consumption at the end of follow-up (controlling for age, sex, and number of months since first inhalation) among dependent subjects was 29.1 among normal inactivators, compared to 17.2, and 12.7 among slower (1-2 copies of *9 or *12), and slowest (1-2 copies of *2 or *4) inactivators, respectively (p=0.09). Adolescents with 1-2 copies of CYP2A6*2 or *4 are at substantially increased risk of becoming dependent but smoke less once dependent. Genetic risk for ND should be considered in the conceptualization of tobacco control programs for adolescents.

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PA7-7
GENETIC VARIATION IN THE DOPAMINE D4 RECEPTOR AND IMPACT ON SMOKING BEHAVIOR

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The dopamine D4 receptor (DRD4) is one of a family of receptors involved in dopamine neurotransmission that has been implicated in novelty seeking and reward dependence. As the D4 receptor is expressed in brain regions involved in reward mediation, DRD4 is an attractive candidate as a trait locus for smoking behavior. The gene contains a number of polymorphic sites, including a variable number of tandem repeats (VNR) in Exon 3, corresponding to a highly variable 16 amino acid sequence which is thought to affect ligand binding. Long (L) alleles of the VNR contain 7 or more repeats, whilst short (S) contain six or fewer (commonly 2 or 4 repeats). We examined the VNR along with a single nucleotide polymorphism in the 5 region of the DRD4 gene (~1106 C/T; dbSNP rs936460) in a cohort of age and sex matched current, never and ex-smokers (n=250 in each group) to test associations with smoking status. The VNTR and 1106 sites appear to be linked, with 84% of individuals with L/L genotypes also having CC at ~1106. The allele frequency of the VNTR does not vary according to smoking status, however the rarer C allele at ~1106 seems to be more frequent in never smokers than ever smokers (current and ex combined) (allele frequency 63% vs. 54%, p=0.02). Work is continuing to systematically examine variation across the DRD4 gene and promoter region, (including the previously studied -521 C/T) in order to fully characterize putative associations with smoking.

This research was supported by Cancer Research UK.

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PA7-8
A GENOME-WIDE SEARCH FOR QUANTITATIVE TRAIT LOCI ASSOCIATED WITH TOBACCO USE PHENOTYPES

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This study describes results from a search for quantitative trait loci associated with tobacco use phenotypes in a subsample of families from the longitudinal SMOFAM study. Phenotypic data were collected from a total of 867 individuals representing 389 families; of these, genotype data were obtained from 613 individuals from 158 families with three or more smokers among first-degree relatives. At the time of blood sampling, probands were 28.7 (± 1.6) years of age. Probands and family members were genotyped for 763 dinucleotide repeat microsatellite markers distributed across the 22 autosomes (average inter-marker distance < 5 cM). A multistage data checking approach was used to minimize errors in pedigree structure, sample identity, and genotypes. Variance component multipoint linkage results identified 13 regions on 9 chromosomes (4, 6, 8, 13, 14, 15, 16, 18, 19) with LOD scores of 2.0 or greater. Among the phenotypes with significant linkage peaks were the Fagerström Test for Nicotine Dependence score (chromosome 6, 178 cM, LOD score = 2.73) and the total number of DSM IV nicotine dependence symptoms (chromosome 8, 31 cM, LOD score = 2.71). Effort is underway to identify genes known or suspected to have functional significance of relevance to nicotine dependence within the regions containing the linkage peaks. Preliminary results support the hypothesis that tobacco use is genetically heterogeneous and multifactorial.

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PA8-1
MECAMYLAMINE ENHANCES CUE-INDUCED MOOD IN NICOTINE DEPRIVED SMOKERS

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The nicotinic antagonist, mecamylamine, has been shown to reduce cue-elicted craving, enhance mood, and aid in smoking cessation. In a double blind, within-subjects design, 16 dependent smokers received mecamylamine (10 mg) or placebo capsules on two different days. Subjects imagined urge and non-urge scenarios after smoking their usual brand and denicotinized cigarettes. Heart rate and skin conductance were measured before and while hearing scenarios and while imagining scenarios. Following smoking and after each scenario imagination period, subjects provided ratings of mood, withdrawal symptoms and craving for cigarettes. Smoking usual brand cigarettes resulted in ratings of greater positive effects than smoking denicotinized cigarettes. Mecamylamine blocked heart rate boost and the perceived sensory impact of smoking usual brand cigarettes. Urge script imagination in the mecamylamine + denicotinized condition resulted in calmness ratings similar to usual brand conditions and greater than in the placebo + denicotinized condition. A trend for a pattern consistent with that for calmness was observed for negative affect. These results suggest that mecamylamine can moderate cue-induced mood, independent of global effects on mood or craving.

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PA8-2
SEX DIFFERENCES IN SMOKING MOTIVATION: A PSYCHOPHYSIOLOGICAL INVESTIGATION OF AFFECTIVE REACTIVITY DURING WITHDRAWAL

Joanne M. Hogle*, M.A., and John J. Curtin, Ph.D.

This project examined sex differences in the affective consequences of acute nicotine withdrawal. Eighty subjects (50% female) ages 18-40 were recruited from the university and surrounding community and assigned to one of four groups based on their smoking behavior determined at screening. Dependent daily smokers were randomly assigned to either a 24-hour withdrawal condition or a continued smoking condition. The other two groups were occasional smokers (i.e., never daily smokers) and non-smokers. Subjects participated in an instructed fear paradigm that involved threat of electric shock. Components of negative affective response were measured with fear-potentiated startle both during cues that signaled shock administration and during the post-cue recovery period. Cortisol samples were collected to index neurotransmitter stress response. Self-report was obtained to index subjective affective response. Results indicated that withdrawn female smokers exhibited disinhibition in the neurobiological systems governing negative affectivity. Specifically, recovery from the negative affective response to the stressor was significantly delayed in withdrawn women relative to all other groups (including withdrawn men). In addition, cortisol levels were significantly elevated in withdrawn women relative to all other groups. In contrast, withdrawn men did not exhibit disinhibition on any of the negative affect measures. However, men did report significantly lower positive affect during withdrawal. These sex differences suggest that negative affect may be a primary motivational influence during withdrawal for women, whereas disinhibition of reward systems and positive reinforcement may be more influential for withdrawn men.

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PA8-3
THE EFFECTS OF WITHDRAWAL ON VOLUNTARY AFFECT REGULATION
Megan E. Piper, M.A.*, and John J. Curtin, Ph.D., University of Wisconsin

Negative affect has long been thought to play a key role in the maintenance of tobacco dependence. The current study examined the ability of smokers in withdrawal to regulate their negative affect. 48 daily smokers (≥9 cigarettes/day; 24 men, 24 women) were randomly assigned either to continue or abstain from smoking for 24 hours prior to the study. Using emotion-modulated startle, we examined participants’ reactions to negative and neutral slides, as well as their ability to suppress, enhance, or maintain their negative affect 7, 12, and 15 seconds after slide onset, with maintenance of neutral affect serving as a control condition. Results suggest that smokers’ initial emotional response to negative stimuli was not exacerbated by withdrawal. This replicates previous work from our laboratory. In addition, both withdrawn and continuing smokers were able to effortlessly regulate their emotional response when instructed to do so. However, sex differences were observed in overall regulation ability and in the effect of withdrawal on regulation. Specifically, women were significantly better at suppressing negative affect than were men. Moreover, within the genders interesting differences in regulatory ability over time during withdrawal were noted. In conclusion, these data suggest that while withdrawal does not appear to globally influence a smoker’s ability to voluntarily regulate negative affect, there appear to be important effects based on sex and time course.

This study was conducted at the University of Wisconsin. Supported by National Cancer Institute Grant # P50-CA84724-03.

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PA8-5
CHILDREN’S SMOKING RELATED IMPLICIT ATTITUDES AND EXPLICIT OUTCOME EXPECTANCIES
Craig R. Cold*er*, Rosin M. O’Connor, Kristin Staufflacher, and Paula J. Fite

Cognitions about smoking were assessed in a sample of 50 10-14 year olds that included an over-representation of children with externalizing behavior problems. Implicit attitudes were assessed using a lexical-decision-priming task. Audio primes included smoking and non-smoking related words, and targets were positive, negative, or non-words. Children discriminated words from non-words, and the DV of interest was reaction time (RT). Children also estimated the probability of positive and negative outcomes occurring if they smoked. Results of the priming task suggested that older children were significantly faster at responding to positive relative to negative target words after smoking primes, whereas there was no significant difference in RTs after non-smoking-related primes. Positive and negative target word RTs were similar for younger children, and this was true after both prime types. These findings suggest that older children have a more positive implicit attitude about smoking-related information. Analysis of explicit outcome expectancies suggested that both younger and older children rated negative expectancies as significantly more probable than positive expectancies. However, this difference was less pronounced among older children because, compared to younger children, they rated the probability of negative outcomes to be less probable. Overall, these findings suggest that before their first smoking episode, as children age, the balance of positive to negative –implicit and explicit cognitions shifts to favor a decision to smoke.

This study was supported by the Robert Wood Johnson Foundation through the Tobacco Etiology Research Network, the National Institute of Health (NIDA Grant # DA14386), and the Graduate Student Employee Union at SUNY at Buffalo.

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PA8-4
CONSTRUCTION OF SMOKING-RELEVANT RISK PERCEPTIONS AMONG COLLEGE STUDENTS: THE INFLUENCE OF NEED FOR COGNITION AND MESSAGE CONTENT
Jennifer E. Irvin, Ph.D.*, The University of Texas M.D. Anderson Cancer Center, Vani Nath Simmons, M.A., and Thomas H. Brandon, Ph.D., The University of South Florida

Compared to other unhealthy behaviors, smoking is extremely risky. Despite this, changing smokers’ perceptions of their health risks has been difficult. This study tested whether a dispositional variable, need for cognition (NC) — a component of Petty and Cacioppo’s (1986) Elaboration Likelihood Model of Persuasion— influences smokers’ responses to health risk messages. NC reflects the preference for engaging in effortful cognitive processing of information. 227 college smokers evaluated either a fact-based or emotion-based smoking risk pamphlet, or an unrelated control pamphlet. As hypothesized, the impact of the two risk messages on risk perceptions was moderated by NC among occasional smokers (but not daily smokers). That is, the fact-based message tended to have the greatest influence upon smokers high in NC, whereas the emotion-based message influenced those low in NC. Overall differences in risk perception were found between the control and smoking pamphlets, highlighting the importance of individual difference factors (such as NC) in understanding the effects of health risk messages. Findings demonstrate that individual differences in cognitive processing can influence the potency of smoking risk messages. Findings demonstrate that individual differences in cognitive processing can influence the potency of smoking risk messages.

This study was conducted while the first author was at the University of South Florida. Supported by the University of South Florida and National Cancer Institute Grant R01 CA80706.

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PA8-6
ASSESSING RESOURCE ALLOCATION IN COLLEGE STUDENTS
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Previous research has shown that chewing gum can alleviate withdrawal in smokers. The current study examined the potential mechanism of this effect, specifically using Behavioral Economic theory as a framework to identify possible substitute relationships between alternative activities (particularly chewing gum) and cigarette smoking. While chewing gum was the focus of this investigation, other behavioral alternatives (e.g., meals, leisure activities, and snack foods) were examined as potential substitutes. This study used a hypothetical purchasing task in which participants were asked to visualize being in a lab for a 12 hour period during which time all purchases and consumption would be monitored. An experimenter paced the participant through each trial with a summary of commodities purchased and the amount of money remaining. All commodities were priced using typical costs for the commodity with the exception of cigarettes. Each participant completed 2 test trials under four cigarette price conditions ($.10, $.20, $.50, and $.01 per cigarette) for a total of 8 trials. Elasticity for each commodity was determined by examining the mean regression across the four cigarette costs. Cigarette consumption showed a consistent small change in cigarette consumption across the four prices indicating inelastic demand. Gum consumption, although highly variable, showed a significant increase in demand across the four cigarette prices indicating chewing gum to be a substitute reinforcer for cigarette smoking. The demand for all other commodities showed no change indicating an independent relationship between these commodities and cigarette smoking. Further study is needed to determine the rate at which people would consume these commodities in a real-world situation.

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PA8-7

TRANSDERMAL NICOTINE EFFECTS ON PROSE RECALL AND VIGILANCE IN ADULT MALE SMOKERS AND NON-SMOKERS

Dmitri V. Poltavski, Ph.D.*, and Thomas Petros, Ph.D., University of North Dakota

The present study evaluated effects of transdermal nicotine on semantic memory and attention. Both male smokers (17) and non-smokers (19) were randomly assigned to either a placebo or a nicotine condition (a 21mg patch for smokers and a 7mg patch for non-smokers, respectively). All participants were matched on their verbal ability, anxiety levels and trait arousal using the Wechsler Adult Intelligence Scale-Revised, State-Trait Anxiety Inventory (STAI), the Eyseenk Personality Inventory. Six hours following patch application each participant was tested on prose recall and information processing in a counterbalanced manner. Prose recall was assessed with 4 prose passages, each of which a participant was asked to recall immediately after reading it on a computer screen. Vigilance was measured using a Rapid Visual Information Processing task (RVIP), on which the participants were asked to press a space bar on the computer keyboard every time they were presented with either three consecutive odd or even digits, which flashed on the computer screen one at a time. The results demonstrated that smokers in the placebo group recalled a significantly greater number of propositions than their counterparts in the nicotine group. No significant main effect of dose was indicated for non-smokers. No between-groups differences were found on the RVIP task. This finding was inconsistent with the previous research using RVIP, in which subjects in the 21mg condition displayed significantly greater accuracy in target detection. The results are interpreted on the basis of an exceeded therapeutic window for nicotine found in chronic smokers following 6 hours of patch application.

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PA8-8

PROSPECTIVE EXAMINATION OF EFFECTS OF SMOKING ABSTINENCE ON CORTISOL AND WITHDRAWAL SYMPTOMS AS PREDICTORS OF EARLY SMOKING RELAPSE

Mustafa al’Absi*, Dorothy Hatsukami, Gary L. Davis, Larry Wittmers

This study was conducted to address the hypothesis that exaggerated mood and cortisol changes during the first 24 hours of smoking abstinence are associated with early relapse. Salivary cortisol levels and mood reports were measured during 24-hour ad libitum smoking and the first 24-hour abstinence period of a quit attempt. Seventy-two habitual smokers (34 women and 38 men) who were interested in smoking cessation participated. Cotinine concentrations in saliva and expired carbon monoxide were measured before and after abstinence and one week after quit date to verify smoking status. Abstinence produced significant withdrawal symptoms in all participants and reduced cotinine and carbon monoxide. While participants showed the expected diurnal changes in cortisol levels, those who relapsed within the first week of quitting exhibited a greater drop in morning cortisol concentrations during abstinence relative to their ad libitum levels. Participants who relapsed reported greater withdrawal symptoms, craving for cigarettes, and distress, and they also reported greater reduction in positive affect during the first 24-hour period of abstinence than those who maintained abstinence. These results support the hypothesis that early relapse is associated with exaggerated mood and adrenocortical perturbations observed during the first day of abstinence.

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PA9-1

TOBACCO CONTROL RAPID ASSESSMENT PROCEDURES IN THE DOMINICAN REPUBLIC


Overall goals of the current study are to establish and evaluate tobacco control activities and to build research capacity in the Dominican Republic (DR). The DR has been ranked as 1st or 12th in smoking rates among Latin American Countries, depending on the survey cited. Tobacco use has increased nearly 4-fold over the past 3 decades, with a concomitant rise in tobacco-related morbidity and mortality. However, there is little published research on tobacco attitudes, beliefs, and use patterns in the DR, and there is a lack of tobacco control and intervention programs. To guide the development of such activities, a current snapshot of the smoking culture is needed. This poster will describe a Rapid Assessment Procedures (RAPs) approach that was used over a 2-week period in the DR during Summer, 2003. Six communities were targeted (2 urban, 2 peri-urban, 2 rural) for 2-3 days each. Two interdisciplinary, mixed gender, and mixed nationality teams of 3 investigators each interviewed a total of 26-37 representatives/community, including key organization leaders, key citizens, and the general community, both individually and in focus groups. Interviews continued until redundancy in themes emerged. Results will be presented on perceptions of factors influencing smoking initiation, tobacco use patterns and behaviors, tobacco availability and cost, factors influencing quitting, perceived health effects, and the role of health care providers. Common themes and areas of variability will be described.

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PA9-2

FACTORS RELATED TO INTEREST IN NARGHILE CESSION

Kenneth D. Ward, Ph.D.*, Mark W. Vander Weg, Ph.D., Fadi Hammal, M.D., Wasiim Mazia, M.D., Ph.D., and Thomas Eissenberg, Ph.D., University of Memphis, Syrian Center for Tobacco Studies, and Virginia Commonwealth University

Waterpipe (narghile) use has increased dramatically worldwide in recent years. Research on this traditional Middle Eastern tobacco use method is in its infancy, and little is known about cessation-related attitudes and experiences among users. A random sample of 268 narghile smokers (40% female; mean age 30.1 years; range 18-88) was obtained from cafes and restaurants in Aleppo, Syria. Overall, 14.8% of users perceived themselves to be "very hooked" on narghile, ranging from only 1.4% of monthly users to 43.8% of daily users. The majority of users (86.5%) believed they could quit using narghile any time they wanted. Interest in quitting narghile was expressed by 28.4% of subjects, with the majority (89.2%) reporting health concerns as a primary reason, and 59.2% having made an unsuccessful quit attempt in the past year. In a logistic regression model, independent predictors of interest in quitting included having no close friends who smoke narghile (odds ratio, 95% confidence interval [OR] = 2.0, 1.0-3.9), having family members who disapprove of use (OR = 2.0, 1.1-3.6), being influenced by anti-smoking billboards (OR = 2.8, 1.6-5.1), and being Muslim vs. Christian (OR = 1.8, 0.9-3.8). A sizeable percentage of narghile users express interest in quitting and have tried unsuccessfully in the past to quit. Social influences are important in motivating the desire to quit. Narghile use needs to be considered in developing effective tobacco use cessation programs in the Middle East.

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**PA9-3**

**VALIDITY OF HOUSEHOLD YOUTH SURVEY IN EGYPT**

S. Gadalla, F. Abdel-Aziz, A. Abu-El-Fetouh*, M. El-Setouhy, M.K. Mohamed and E. Israel

Tobacco smoking is a growing public health problem in Egypt. We collected base line data for youth (<18 years of age) smoking behavior in two rural villages in Egypt. This data was collected through questionnaires administered by trained interviewers at home. We were concerned that youth may not tell the truth about their smoking behaviors at home. Therefore, we collected similar data from them at their secondary schools to validate the data. The school survey was carried out using a self-administered anonymous questionnaire. The total number of participants included in home survey was 228 (105 males, 123 females) and 307 were included in school survey (167 males, 140 females). Reported cigarette smoking prevalence was 3.5% at home (6% of the males, 0% of the females) compared to 26% in school survey (39% of the males, 9% of the females). Prevalence of Shisha smoking was 2% in the home survey versus 15% in school survey. The median age of cigarette initiation was 15 years old in home survey versus 10 years old in school survey. The median age of Shisha initiation in home survey was 16 years old compared to 11 years old in school survey. All the other collected variables showed differences when collected at home compared to the same data collected in the school. We concluded that anonymous self-administered questionnaire could be the best choice to collect data on smoking among school students in Egyptian villages. Further study is required to validate the results of the interview questionnaire on adolescents who are not attending school.

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**PA9-4**

**SNUS AND THE RAPIDLY CHANGING PATTERN OF TOBACCO USE IN SWEDEN**

Hans Gilljam

Snus, oral moist snuff, is a traditional Swedish tobacco product on the increase. New data show that by the age of 16, snus is used on a daily basis by 17% of the boys, compared to the 9% who smoke cigarettes regularly. Fifteen percent of the girls are daily smokers and only 1% use snus. As a consequence, the total nicotine load is on the increase among adolescents. Boys mixing cigarettes and snus are of particular concern as they engage in all sorts of problem behaviors. According to a 2003 Stockholm survey (n=5500), 15.6% of the men and 18.2% of the women are daily smokers. Occasional smoking has increased to 14.6% and 11.7%, respectively. Mixed use of cigarettes and snus is seen among 11.7% of males. Daily use of snus is reported by 25% of men aged 40 years with a university degree. Younger men with shorter education reported a high 35% of daily snus users. Snus, traditionally used by older males, is now a habit of young males. However, urban women with a university degree and rural women in the remote north increasingly turn to snus to satisfy the craving for nicotine. The annual smoking cessation rate is presently 3.9%. In retrospect, 29% of successful male quitters reported using snus as a means of quitting smoking, and 2/3 of them ended up as chronic snus users. In contrast, pharmaceutical NRT had been used by 45% of the successful female quitters with only 2% reporting chronic NRT use. Heavy marketing of snus has created a tobacco situation in Sweden that is unique in Europe. The long-term effects of this national experiment will be discussed.

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**PA9-5**

**NATIVE VISION TOBACCO RESEARCH PROJECT**

Theda McPherson Keel, University of Maryland; Joe Jose, M.S.W., Native American Community Health Center

Native American Community Health Center, Wind Hollow Foundation and other organizations have partnered to conduct research into the Dual view of tobacco (ceremonial/sacred verses commercial/daily) among American Indians in Arizona. This project has used collaborative efforts and grassroots participants, tribal leaders, and traditional practitioners to study the attitudes, beliefs, behaviors, and practices of tribal persons and tobacco in Arizona. Quantitative and qualitative data has been collected and is combined into a single database used to develop tobacco cessation/reduction programs. This research has also documented the Dual view of tobacco among tribal populations and suggested ways in which this Dual view can be incorporated into tobacco cessation/reduction programs. This “blending” of approaches and programs has allowed academic researchers to partner with service providers to jointly focus on community needs, research priorities, and increased resources necessary for the development of culturally appropriate tobacco cessation/reduction programs. Examples of culturally specific and appropriate survey/data collection methods as well as data return and implementation in the community will be detailed.

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**PA9-6**

**GENDER DIFFERENCES IN BELIEFS ABOUT “LIGHT” CIGARETTES AMONG HIGH SCHOOL STUDENTS IN CANADA AND THE UNITED STATES: RESULTS FROM THE NORTH AMERICAN STUDENT SMOKING SURVEY**

Tara E. Elton* and Geoffrey T. Fong

The removal of “light” and “mild” brand descriptors is one of the policies listed in the Framework Convention on Tobacco Control because of evidence that adult smokers believe that smoking such brands are less harmful than “regular” brands. Fong, Elton, and Madill (2002) have shown that these misperceptions of light brands are also held by smoking youth. The present paper reports on marked gender differences in perceptions of “light” cigarettes among youth with data from the North American Student Smoking Survey (NASSS; Fong et al., 2003), a longitudinal survey of about 12,000 high school students in Canada and the United States, 3,240 of whom are established or experimental smokers. Male smokers were significantly more likely to agree that “some kinds of cigarettes are safer” (p < 0.0001), that light cigarettes are less addictive than regular cigarettes (p = 0.0003), and that lights have less tar than regular cigarettes (p = 0.01), controlling for age, smoking status, and strength of cigarettes smoked. Although female smoking youth were generally more concerned about the health impact of smoking and were less likely to believe that lights conferred health benefits, they were more likely to hold one particular belief about lights: that lights can be used as a step toward quitting completely (p = 0.0002). These results support the FCTC prohibition of these misleading brand descriptors.

*U.S. National Cancer Institute, Canadian Tobacco Control Research Initiative, Centre for Behavioural Research and Program Evaluation, National Cancer Institute of Canada/Canadian Cancer Society Canadian Institutes for Health Research.*

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The Framework Convention on Tobacco Control requires the elimination of “light,” “mild” and other brand descriptors because these have the potential to mislead consumers into believing that such brands confer health benefits. This paper reports on the perceptions of lights from 8,913 smokers across four countries (USA, UK, Canada, and Australia), who were interviewed in Oct-Dec 2002 for the International Tobacco Control Policy Evaluation Survey. Results show evidence of widespread beliefs that lights are less harmful. Overall, 67% of smokers indicated that there was some health benefit of smoking lights. Canadian smokers were least likely to hold these beliefs (55%) and UK smokers were most likely (78%). Smokers of lights and lower consumption smokers were more likely to believe that lights conferred benefits. Most smokers were unaware of the role that filter ventilation plays in light cigarettes. Our analyses suggest that information on cigarette packaging and other health education messages is the most likely reason for the differences in health beliefs about lights among the four countries, and that better public education is needed to inform smokers about this deception, if only as a means of getting legislation to outlaw them. These findings support the FCTC’s call to eliminate “light,” “mild,” and other methods of misleading consumers into thinking that health benefits exist for such brands.


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DO SMOKERS FROM DIFFERENT COUNTRIES DIFFER IN THEIR LEVELS OF DEPENDENCE?

A persistent debate in tobacco control is whether, as smoking prevalence declines, the proportion of hard-core smokers (smokers unwilling or unable to quit) increases and/or the smoking population becomes more resistant to quitting. The evidence to date is mixed. We addressed this issue via the International Tobacco Control Policy Evaluation Survey (ITCPES), a random digit dialed telephone survey of a cohort of over 8,000 adult smokers across four countries - Canada, United States, United Kingdom, and Australia - whose primary goal is to evaluate the psychosocial and behavioural impact of tobacco control policies of the Framework Convention on Tobacco Control. The findings reported here are from the October 2002 baseline wave. Indicators of dependence between smokers from the four countries are compared, including cigarette consumption, time to first cigarette (the Heaviness of Smoking Index, HSI) as well as perceived dependence, intention to quit and previous attempts at quitting. Among daily smokers, US smokers scored highest on the HSI, followed by Canadians and Australians with UK smokers lowest (p<0.001). Significant differences in dependence measures between smokers in the four countries and proportions of hardcore smokers are related to sociodemographic data, country prevalence estimates and tobacco control policies, in particular cost of cigarettes and availability and reimbursement of treatment in those countries.

Robert Wood Johnson Foundation, Canadian Institutes for Health Research, Cancer Research UK, Centre for Behavioural Research and Program Evaluation of the National Cancer Institute of Canada/Canadian Cancer Society, Canadian Tobacco Control Research Initiative.

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POS1-002 TOWN CHARACTERISTICS PREDICTIVE OF SUPPORT FOR THE 1993 MASSACHUSETTS TOBACCO TAX

William L. Hamilton, Ph.D., Abt Associates Inc. and Lois Biener, Ph.D.*, University of Massachusetts Boston

Raising tobacco excise taxes has been a central component of comprehensive tobacco control programs in many states. Increasing tobacco taxes is a beneficial public health policy because it has been shown to reduce youth uptake and decrease adult consumption. The aim of this paper is to investigate predictors of the proportion of voters in each of Massachusetts’ 351 cities and towns who voted in support of Question 1 which raised tobacco taxes and provided funds for the Massachusetts Tobacco Control Program. Data on the percent ‘yes’ on Question 1 was provided by the Elections Division, and town characteristics such as population size and density, education level, ethnicity, income were available from the 1990 census. The bivariate correlation between mean education and percent ‘yes’ was .91. Multiple regression analysis showed that the most important predictor of percent ‘yes’ on question 1 was mean education. With education held constant, towns with higher income tended to cast fewer rather than more votes in favor of Question 1. The same pattern is observed with race. Higher percentages of black and Hispanic population are associated with a higher percent ‘yes’ in the multivariate analysis (although both fall short of the 0.05 level of significance). Although percent ‘yes’ is also highly related to a predicted smoking prevalence estimate for the town, results suggest that people do not vote principally on the basis of their smoking status. The percent who voted against Question 1 was greater than the percent who smoke. We therefore hypothesize that people’s votes depend on their understanding of the public health issues related to smoking, and their position on issues such as taxation and the role of government, as well as on their smoking status. Support for voter referenda on tobacco taxes can be seen as a good indicator of anti-tobacco sentiment prior to the implementation of program-driven tobacco control interventions.

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POS1-003 PERCEPTIONS OF THE IMPACT OF TOBACCO TAX INCREASES AMONG LOW-INCOME SMOKERS IN NEW YORK CITY

*Louise Ackerman

Tobacco taxes are a fundamental component of comprehensive tobacco control. Studies show that when the price of cigarettes goes up consumption goes down, particularly among low-income smokers. But for low-income smokers, who can not or will not quit smoking—the vast majority—the additional expense may impact their lives in ways policymakers neither anticipate nor intend. The purpose of this study is to explore that issue among a select group of low-income smokers living in New York City, where a 26% tobacco tax increase in 2002 raised the per pack price of cigarettes to between $7 and $9, the highest in the nation. Using a qualitative paradigm, the research examines the perceived effects of the tax increase and the resulting higher cost of cigarettes among a group of New York City smokers, who live at or below 200% of the federal poverty level. Data was collected in face-to-face interviews with a purposive sample selected from diverse racial and ethnic backgrounds and included both working poor and those living on public assistance. Among the findings are that, as a result of the tax increase, few participants have altered their smoking pattern; most engage in behaviors both legal and illegal to avoid paying the full retail price for cigarettes; and that coping strategies differ between smokers living on earned income and those living on assistance.

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HOUSEHOLD TOBACCO EXPENDITURES AND SPENDING PATTERNS OF LOW INCOME FAMILIES

Susan H. Busch,PhD* Tracy A. Faiba,PhD Jody L. Sindelar, PhD

As a single budget line item, the amount some households spend annually on tobacco products is considerable. In this research we use data collected by the Bureau of Labor Statistics, the Consumer Expenditure Survey (2000), to compare overall household spending patterns of ‘smoking households’ with those of ‘non-smoking households.’ We find significant variation in the amount households spend on tobacco. On average, households in the lowest income decile that smoke spend $986 on cigarettes and tobacco supplies, or 19 percent of their reported income. In contrast, the median income smoking household spends more in absolute dollars ($1220), but this is about 4 percent of their reported income. Next, we consider how smoking affects low-income household expenditure patterns (e.g., decreased spending on children, housing, food etc.). Comparing smoking and non-smoking households that are similar in income, we find that smoking households spend significantly less on housing, health care and education, and more on alcohol. Thus, quitting will help low income families because they will have more income to spend on other goods (CBO, 1990). These goods may in turn improve health (of both the smoker and the smoker’s family), in addition to the direct effect of smoking cessation on the smoker’s health. This burden is particularly notable for poor families.

The Robert Wood Johnson Foundation (#039787), as part of the Transdisciplinary Tobacco Use Research Center at Yale.

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SMOKERS’ CIGARETTE PURCHASING BEHAVIORS: THE INFLUENCE OF PRICE

Victoria White PhD (1), “Elizabeth Gilpin MS (2), Martha White MS (2), John Pierce PhD (2); (1) Cancer Council Victoria, and (2) University of California, San Diego

The $1.20/pack increase in the price of cigarettes in California in 1999 may have influenced smokers to adopt price-minimizing behaviors. Using data from 5113 smokers participating in a population-based telephone survey of Californians conducted in 2002, we examine whether smokers employ price minimizing behaviors, determine how these behaviors influence the price smokers pay for cigarettes and examine reasons for engaging in specific purchasing behaviors. Smokers were most likely to say price influenced where they bought cigarettes (62%) but 29% reported that price influenced the brand smoked. Smokers were grouped according to whether price influenced both retail outlet and brand (24%), either retail outlet or brand (43%) or neither (33%). Smokers reporting both influences (price responsive smokers) paid about 50 cents less for a pack of cigarettes ($4.34 vs $3.82 for pack purchasers and $3.26 vs $2.74 for carton buyers). Smokers who bought by the carton saved the most, yet only 28% of smokers did this. The main reason for buying by the pack was to control the amount smoked (42%) and this percentage did not differ for price responsive and non-responsive buyers. The higher upfront cost of a carton was the next most mentioned reason (16%) and was most commonly given by price responsive smokers. While many smokers attempt to minimize the cost of their smoking, the strategies chosen are influenced by a number of factors including the desire to control the amount smoked. Whether this desire reflects smokers’ attempts to reduce the impact of smoking on their health, or is a further attempt to control their budget, needs investigation.

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HOW DO EXPENDITURE PATTERNS OF SMOKING AND NON-SMOKING HOUSEHOLD VARY? RESULTS FROM THE 1998-99 HOUSEHOLD EXPENDITURE SURVEY

Siahpush M*, Borland R, Michelle S

The aim of this research was to examine how household expenditure patterns vary between smoking and non-smoking households. We used data from a cross sectional survey of households from private dwellings, conducted by the Australian Bureau of Statistics (n = 6892). Outcome measures were expenditure on meals at restaurants, alcohol, alcoholic beverages at licensed premises, gambling, and insurance. The odds of reporting expenditure on restaurant food and on any type of insurance were 20% and 50% smaller for smoking than non-smoking households, respectively. The odds of reporting expenditure on alcohol, drinking at licensed premises and gambling were 100%, 50% and 30% greater for smoking than for non-smoking households, respectively. From this it can be concluded that smoke-free dining is likely to increase patronage of restaurants. Implementing smoking bans in licensed premises and gambling venues can provide a cost effective public health opportunity to reduce smoking prevalence. Quitting or cutting down smoking results in increased household funds, provides opportunities for expenditure on other products or services, and enhances standards of living.

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CONSUMER CIGARETTE PURCHASING PATTERNS AND LOST TAX REVENUE, ERIE AND NIAGARA COUNTIES, NEW YORK

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Problem/Objective: To assess the cigarette purchase patterns of smokers in Erie and Niagara Counties, New York, and the extent to which smokers avoid taxes on cigarettes. Methods: Data were collected with telephone interviews of a sample of 1,546 randomly selected persons age 16 and above in Erie and Niagara Counties between October 2002 and March 2003. Purchase patterns of smokers were used to estimate a range of tax dollars not collected by New York State and the counties. Results: Most smokers (82%) reported that cigarette price increases have affected their smoking behavior in the past year. Fifty-five percent of current smokers reported that they regularly buy their cigarettes on an Indian reservation, while 3% reported going to another state, and 1% reported using the Internet. Smokers who reported regularly purchasing untaxed cigarettes from one of these sources were less likely to report attempting to quit in the last 12 months compared to smokers who did not purchase untaxed cigarettes (45% vs. 59%, p<.05). If smokers purchased just half of their cigarettes on Indian reservations, New York State would lose an estimated $24 million in sales and excise taxes from Erie/Niagara residents each year. This translates into Erie County losing $2 million and Niagara losing $1 million in sales tax each year. Conclusions: Price influences smoking behavior; however, the majority of smokers in Erie and Niagara counties are taking advantage of readily available venues where less expensive, untaxed cigarettes are sold. This research was funded by a grant from the New York State Department of Health.

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POS1-008  THE IMPACT OF CIGARETTE PRICE INCREASES ON QUIT ATTEMPTS AND ABSTINENCE IN CALIFORNIA

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We investigated whether smoking cessation increased in California after a cigarette manufacturers' retail price increase and an increase in the state cigarette excise tax. The sample for this study was drawn from the 1996 and 1999 California Tobacco Surveys (CTS). The rate of unsuccessful and successful quit attempts and the rate of abstinence were calculated for each month of the 14-month period preceding each survey administration. We combined the monthly rates for both surveys and used multiple regression to test whether the proportion of smokers reporting a quit attempt and the proportion of smokers reporting abstinence increased during the period following the price increases. Because several factors other than the price increases could account for an increase in quit attempts and abstinence, we included several covariates in our models. Smokers recall quits occurring closer to the date of the survey better than quits occurring further back in time. Thus, we included a term in the models representing the number of months elapsed between the survey administration and the reported quit to control for this bias. We also included a term in the models representing the months before and after the over-the-counter (OTC) availability of NRT in 1996 to control for the increase in smoking cessation observed following the availability of OTC NRT. The regression models indicated a significantly greater proportion of smokers reported quit attempts (p<0.05) and abstinence (p<0.05) immediately following the increase in cigarette price.

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POS1-009  CIGARETTE PURCHASE PATTERNS AND CIGARETTE PRICES: US DATA FROM THE INTERNATIONAL TOBACCO CONTROL POLICY EVALUATION SURVEY

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There exists a negative relationship between cigarette prices and smoking prevalence and consumption. However, reducing consumption and quitting are only two possible responses to an increase in price; we know little about other responses that confer no public health benefits, for example, buying from cheaper sources. We present data from the International Tobacco Control Policy Evaluation Survey, a random digit dialed telephone survey of a cohort of over 8,000 adult smokers across four countries with a focus on data from the United States. The results from the baseline wave, collected in October-December 2002, demonstrate that: (1) significant price differentials exists within the US; (2) 23% of US smokers report they’ve made special efforts to get cigarettes less expensively in the past 6 months compared to 39% of smokers in New York State, which has a high excise tax and is in close proximity to several low or untaxed sources; and 3) 25% of smokers in New York report they buy most of their cigarettes from a low or untaxed source include Indian reservations, the Internet, other states, and toll-free telephone numbers compared with less than 2% of smokers in the rest of the US. These findings indicate that a considerable percentage of smokers are avoiding paying higher cigarette prices, which may negate the public health benefit of cigarette excise tax increases.

Canadian Institutes for Health Research The Robert Wood Johnson Foundation Cancer Research U.K. Canadian Tobacco Control Research Initiative Australia Commonwealth Department of Health and Ageing Centre for Behavioural Research and Program Evaluation, National Cancer Institute of Canada/Canadian Cancer Society

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POS1-011  MERCHANDISING OF CIGARETTES IN SAN FRANCISCO PHARMACIES: 27 YEARS LATER

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Although clinicians have a duty to promote health, pharmacies in the U.S. continue to sell tobacco products, thereby violating the pharmacist’s Code of Ethics. In a study conducted in 1976, we determined that 89% of 100 randomly-selected San Francisco pharmacies sold cigarettes. To estimate change in the proportion of pharmacies selling cigarettes, we replicated this previous study using a parallel design. In 2003, 61 of 100 San Francisco pharmacies sold cigarettes (94% of 48 chain pharmacies; 24% of 29 independent pharmacies, 0% of 12 clinically-affiliated pharmacies, 100% of 8 grocery store-based pharmacies, 0% of 2 combination chain/clinically-affiliated pharmacies, and 100% of 1 mass merchant-based pharmacy), a significant decrease since 1976 (p<0.00001). Fifty-one (84%) of the 61 stores that sold cigarettes also advertised tobacco products, and in 10 of the stores (16%), cigarettes were located in the same half of the establishment as the prescription dispensing area. Nonprescription nicotine replacement therapy was stocked by 77% of pharmacies (93% of those selling cigarettes), and 55% of stores selling cigarettes stocked these pharmaceutical agents immediately adjacent to the cigarettes. Concurrent with an increased awareness of the negative health consequences of smoking over the past 27 years, we observed an overall decline in the proportion of pharmacies that sell cigarettes – yet, the majority of pharmacies, particularly chain pharmacies, continue to sell these products. Owners and employees of pharmacies that are active purveyors of tobacco products are encouraged to revisit the ethics of perpetuating the use of a key risk factor for disease via an environment that has a primary goal of promoting health.

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POS1-012  IS TOBACCO SALES POLICY RELATED TO PHARMACISTS’ SMOKING CESSATION PRACTICES?

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In Canada, the sale of tobacco products in pharmacies is governed by provincial legislation. This study examines the professional practices and opinions of pharmacists in relation to the policy environment with respect to tobacco sales in pharmacies. A detailed questionnaire was mailed to community pharmacists practicing in four Canadian provinces. Provinces were selected based on provincial restrictions on tobacco sales in pharmacies. The overall response rate was 72% (n=996). Practices and opinions were compared between: i) pharmacists in provinces allowing and those not allowing the sales of tobacco in pharmacies, ii) pharmacists selling tobacco and those that do not within provinces permitting pharmacy tobacco sales, and iii) pharmacists that do not sell tobacco and pharmacists in provinces not permitting pharmacy tobacco sales. Logistic regression, controlling for practice years, sex, and community size was employed. Pharmacists practicing in provinces allowing pharmacy tobacco sales were twice as likely to know their clients’ smoking status and feel that assisting in smoking cessation is an important role for pharmacists (p<0.001), but were 3.6 times less likely to ask new patients about smoking, compared to pharmacists in provinces banning pharmacy tobacco sales (p<0.05). There were no significant differences between pharmacists selling tobacco and those not within provinces allowing pharmacy tobacco sales, nor between pharmacists not selling tobacco and their peers under sales restrictions (p>0.10). Pharmacists’ smoking-related practices are related to provincial policy on pharmacy tobacco sales, not directly to pharmacy tobacco sales.

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POSI-013  CHALLENGE TO OPPORTUNITY: ORGANIZATION, FINANCING, AND DELIVERY OF TOBACCO CESSATION SERVICES AT THE STATE LEVEL

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The Center for Tobacco Cessation established a policy roundtable to examine how states can expand coverage for tobacco dependence treatment in the US. The project’s assessment focused on the organization, delivery, and financing of state services, quality assurance and policy implications related to expansion efforts. Methods: Three meetings were convened for this multidisciplinary 16 member roundtable to hear case studies of select states’ experiences in expanding cessation services and from experts on cessation science, policy, and implementation issues. An environmental scan of state cessation activities and a 50 state survey of cessation activities were also conducted. Results: The roundtable assessed the current condition of state cessation activities to identify key factors that inhibit or enhance cessation services delivery. A project report and call to action document were created to disseminate the results and recommendations. Opportunities do exist for organizing, financing, and delivering effective statewide cessation services. Existence if a state-based quitline often serves as a catalyst for other cessation activities. Any attempts to increase access to tobacco dependence treatment must be combined with efforts to decrease the financial, cultural, and environmental barriers to obtaining treatment. While the political environment of any state weighs heavily on the provision of cessation services, it appears that key stakeholders in the public and private sectors understand that they share the responsibility for such services. Collaboration between these sectors and agreement about roles and responsibilities is the greatest determinant of success in such expansion efforts.

American Cancer Society. The Robert Wood Johnson Foundation

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POSI-014  DIFFERENTIAL EFFECTS OF TOBACCO CONTROL POLICIES ON QUITTING BEHAVIORS BY EVERYDAY SMOKERS AND SOMEDAY SMOKERS: EVIDENCE FROM THE CURRENT POPULATION SURVEY

Lan Liang, Ph.D.* and John A. Taurus, Ph.D. University of Illinois at Chicago

Numerous studies have linked higher cigarette prices with reduced smoking and in some cases, quitting. A disturbing trend, however, is the growing number of smokers who smoke “part-time”. Given the unproven health benefits of simply reducing cigarette consumption, it is paramount to analyze whether these someday smokers respond to tobacco control policies differently than the typical everyday smokers regarding smoking cessation. Using the 1992-1993, 1995-1996, and 1998-1999 Waves of Tobacco Supplements to the Current Population Survey, we estimated the effects of cigarette prices and clean indoor air laws on whether a smoker had successfully given up smoking in the previous year or had intention to quit in the 30 days or six month. Compared to everyday smokers, a higher percentage of the someday smokers quit in the previous 12 month and a higher percentage intend to quit. However, prices do not affect one-year cessation rate by someday smokers even though a one-dollar increase in real cigarette price increases smoking cessation by 3.8 percent in all smokers and 4.2 percent in everyday smokers. Clean indoor air law indices are also found to be effective among everyday smokers and the whole sample but not among someday smokers. Similarly, higher cigarette prices and stricter clean indoor air laws are associated with higher probability to report intention to quit for all smokers and everyday smokers but not for someday smokers. The above results suggested that more specific policies that target explicitly on the growing number of someday smokers might be needed.

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POSI-015  POLICY PREDICTORS OF ADULT PARTICIPATION IN CESSATION PROGRAMS, QUIT ATTEMPTS, AND SMOKING PREVALENCE IN KENTUCKY

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Kentucky leads the nation in adult smoking prevalence (CDC, 2001). The effects of tobacco cessation treatment factors, and environmental, structural, and client factors on adults’ participation in tobacco cessation programs, quit attempts, and smoking prevalence at the local level in Kentucky were examined using Meier’s Theory of Morality Policy (1994) and the Logic of Governance Model (Lynn, et al., 2000). Treatment factors included existence, number, and type of tobacco cessation services, and funding for tobacco control programs including counter-advertising expenditures. Environmental factors included percent of smoke-free food establishments and pounds of tobacco produced. Structural factors included organizational format of health departments and tobacco coordinator employment status. Client factors included age, race, gender and education of health department service area (HDSA) residents. A pooled time series cross-sectional research design was used to analyze the primary and secondary data collected at the population level and obtained from state and local agencies. Multivariate analyses using fixed effects modeling was used to test the research hypotheses. Number of programs, counter-advertising and age contributed the most toward participation in tobacco cessation programs. For example, for every $1.00 spent on counter-advertising, participation by adult smokers would increase by 26 per 10,000 smokers. There were no significant predictors of quit attempts. Age, race, and tobacco production contributed the most toward smoking prevalence. For example, for every pound of tobacco per capita produced per HDSA, smoking prevalence increased by 0.01%, which is significant given that tobacco production ranged from 0.04 to 810.0 pounds per capita. It is recommended that all local health departments initiate or increase counter-advertising, targeting younger adults and HDAS with higher tobacco production per capita; enhance marketing efforts for cessation; and increase the number of cessation programs offered by HDAS to as many as is feasible and affordable.

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POSI-016  PRELIMINARY FINDINGS OF SMOKING POLICIES IN NURSING HOMES

Jessica A. Kulak*, Celia A. Watt* Ph.D., Jill W. Lassiter M.S.Ed., Courtney E. Voorhis*, Andrew S. Giroux*, and Deborah Ossip-Klein, Ph.D.

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 (Omnibus Budget Reconciliation Act of 1987). In addition, nurses in all healthcare settings are encouraged to advise patients to discontinue or modify their tobacco use, however research indicates that the majority of long-term care residents do not receive such advice. Because of close living proximity and exposure to environmental tobacco smoke, restricted mobility of many residents, needs for assisted smoking, and other safety concerns that present risks for smoking and non-smoking residents and staff, an examination of the policies addressing resident smoking in nursing home facilities is necessary. This study will present preliminary findings of a nation-wide project that examined nursing homes’ tobacco policies for residents. Policies of geographically diverse facilities (N = 45) that allow smoking indoors and outdoors, outdoors only, and non-smoking facilities will be described using three separate rubrics. Discussion will focus on the prevalence of numerous factors (e.g. who is allowed to smoke and how that is determined, resident safety, environmental safeguards, the offering of education or cessation tools, consequences of violation of the policy, etc.). Although nursing homes may in fact have practices that are more extensive than their policies portray, this is a necessary step in addressing advising practices in nursing home facilities to assist them in creating policies that align with their goals and desired practices.

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POS1-018  RESEARCH CAPACITY BUILDING IN THE DOMINICAN REPUBLIC: BARRIERS AND FACILITATORS TO INTERNATIONAL BIOETHICS REVIEW OF A TOBACCO CONTROL STUDY

Scott McIntosh*, Essie Sierra, Sergio Díaz, Zahira Quijones-Tavárez, Omar Díaz-Reyes, LaToya Armstrong, Timothy Dye, Ann Dozier, Deborah J. Ossip-Klein

There are similarities and differences among Latin American countries, and between Latin American countries and the United States, in their approaches to ethics (Drane & Fuenzalida, 1991). Opportunities exist for U.S. researchers to help get bioethics review processes and research activities more involved and part of routine policy in behavioral research in Latin America. As with any country, the Dominican Republic has a unique political and academic environment which has supported behavioral research in the past, and which has demonstrated commitments to increase the quality and scope of such research. In a current tobacco control clinical trial in the D.R., specific barriers to and facilitators of the engagement of a bioethical review process were identified. This poster describes these specific barriers and facilitators. Our approaches to build upon available facilitators and to successfully deal with barriers, and our description of “lessons learned” can serve as a beginning point for other tobacco researchers in countries with developing research capacities.

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POS1-019  TOBACCO DENORMALIZATION AND INTENTIONS TO QUIT AMONG SMOKERS FROM FOUR COUNTRIES: FINDINGS FROM THE INTERNATIONAL TOBACCO CONTROL POLICY EVALUATION SURVEY

David Hammond*, Geoffrey T. Fong, Tara E. Elton, and Mark P. Zanna for the ITCPES Research Team

Tobacco denormalization has emerged as an important concept for understanding and preventing tobacco use. Denormalization strategies fall into two broad categories: social denormalization, including social disapproval and unacceptability of tobacco use, and industry denormalization, highlighting the negative conduct of the tobacco industry. Denormalization interventions have been most closely associated with anti-industry media campaigns, however other policy interventions such as graphic warning labels and smoking restrictions may have direct or indirect influences on denormalization, and social norms in particular. The current study assessed denormalization measures among 8,923 adult smokers in Canada, US, Australia, and the UK, as part of the International Tobacco Control Policy Evaluation Survey. Overall, 82% of smokers reported that society disapproves of smoking, 89% agreed that people important to them felt they should not smoke, and 82% agreed that there were fewer and fewer places they felt comfortable smoking. Smokers who reported greater social denormalization were significantly (OR=2.22, 1.87-2.64) more likely to intend to quit smoking. Measures of industry denormalization (e.g. “Tobacco companies can’t be trusted”) were also associated with intentions to quit (OR=1.92, 1.51-2.44), adjusting for social denormalization, smoking measures, and demographics. Specific policies, including media and warning labels, were associated with stronger denormalization beliefs. The role of specific policies, as well as differences in denormalization among the 4 countries, will be discussed.


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POS1-020  ATTITUDES TOWARD THE TOBACCO INDUSTRY AND GOVERNMENT INTERVENTION ACROSS FOUR COUNTRIES: FINDINGS FROM THE INTERNATIONAL TOBACCO CONTROL POLICY EVALUATION SURVEY

Ron Borland*, Geoffrey T. Fong, K. Michael Cummings, Gerard Hastings, and David Hammond for the ITCPES Research Team

Governments seem to feel unable to take strong regulatory action to more effectively control the actions of tobacco companies. This may be due, in part, to perceptions among policymakers that tobacco control policies would not be supported by smokers. This paper reports on attitudes toward tobacco companies and toward government control from 8,900 smokers across four countries (USA, UK, Canada, and Australia), who were interviewed in Oct-Dec 2002 for the International Tobacco Control Policy Evaluation Survey. Results showed strong support among smokers in all four countries for stronger regulatory action. 68% of smokers agreed that tobacco companies should not be allowed to advertise and promote cigarettes as they please, and 67% believe they should be more tightly regulated. This may be because only 19% believe that tobacco companies can be trusted to tell the truth about the dangers of their products. 58% believe that the government should do more to tackle the harm done by smoking. Smokers see their failure to do so in cynical terms: 70% agree that the government doesn’t really care about people smoking because it makes so much money from tobacco taxes. Support for industry regulation was strongest in Australia and weakest in the USA, while cynicism about government motives was highest in the UK and lowest in the USA.


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THE TOBACCO INDUSTRY AND PESTICIDE REGULATIONS

Patricia A. McDaniel*, Gina Solomon and Ruth E. Malone

Background: In many countries, tobacco and tobacco products are not subject to the same pesticide regulations as food crops. Since the 1970s, in response to growing concerns about the environmental and health risks associated with pesticides, state and federal government agencies have attempted to ban or regulate a number of pesticides used in growing tobacco. Objective: To describe the tobacco industry's activities related to governmental regulations of pesticides used on tobacco.

Methods: Review and analysis of publicly available internal tobacco industry documents and relevant secondary data sources, including regulatory agency documents. Development of case studies of specific pesticide regulation efforts and internal/external tobacco industry efforts to influence them. Results: Documents show that the tobacco industry a) has been concerned about the health risks posed by particular pesticides used on tobacco since the early 1960s, sometimes before health questions were raised by scientists, environmentalists, or policy makers; b) mobilized politicians, pesticide manufacturers, and other industries to prevent the implementation of pesticide regulations; and c) worked with "independent" scientists to challenge the scientific basis of regulators' concerns about the health or environmental risks of particular pesticides. Conclusions: The tobacco industry appears to have successfully influenced regulations and shielded information about tobacco pesticides and their effects from public scrutiny. Partially due to tobacco industry efforts, tobacco has escaped some of the laws and regulations aimed at protecting the public from hazardous pesticide exposures in food products. These regulatory gaps should be addressed. Stronger conflict of interest policies are also needed in government rulemakings to avoid undue influence by the regulated industry.

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EFFICACY OF SIX STATE-LEVEL TOBACCO QUITLINE INTERVENTIONS

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To explore the optimal mix of services for state-level tobacco quitlines, this 3x2 randomized trial compared Brief, Moderate, and Intensive counseling with and without an offer of free nicotine patches (NRT). Subjects included 4,223 consenting (76% of eligible) smokers who called the Oregon Quitline for help. Brief counseling provided intake plus one 15-minute call (i.e., advice, assessment of readiness and barriers, and cessation planning), mailed materials, and linkages to community cessation resources. Moderate counseling provided mailings, and one 30-minute intervention call plus a brief follow-up call. Intensive counseling provided mailed materials and up to five proactive calls. Process and six-months outcomes are presented. One-year outcomes are in progress. Subject characteristics were similar across cells in terms of gender, race, marital status, and education. When offered, NRT was accepted more often in the Brief (96%) and Moderate (94%) arms, compared to Intensive (82%). Phone contacts increased as intended across the Brief (no NRT=1.0/NRT =1.1), Moderate (1.5/1.8), and Intensive (2.4/2.7) arms. Total minutes of staff contact time (intake plus intervention) also increased across the Brief (27/31), Moderate (48/56), and Intensive (68/76) arms. After six months (67% completion rate with missing counted as smokers), the 30-day-sustained tobacco abstinence rate increased with intervention dose and NRT: Moderate versus Brief (OR=1.32; CI=1.07-1.63), Intensive versus Brief (OR=1.52, CI=1.24-1.87), and NRT offer versus no offer (OR=2.03; CI=1.70-2.42). While more intensive interventions and NRT increased short-term quit rates in this real-world context, state policy decisions should ideally be guided by cost-effectiveness results using longer-term outcomes—the ultimate aim of this study.

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EVOLUTION OF THE TRUTH BRAND: 2000-2003

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As a result of tobacco industry advertising, smoking in entertainment media, and related social images, youth perceive smoking to be socially desirable. The truth campaign combats influences on smoking by branding a nonsmoking lifestyle as socially desirable. The campaign employs a branding strategy that associates desirable images (e.g., risky, cool) with nonsmokers. Since 2000, the Legacy Media Tracking Survey (LMTS) has collected data on truthsm brand equity among cross-sections of youth 12-17. Brand equity is measured as a multi-dimensional scale shown to have excellent psychometric properties. We analyze the brand equity factor for trends and changes by target audience (e.g., gender, racial/ethnic) over 3 years of the truth campaign. We hypothesize that there is an increase in the brand equity factor over time among the target audience of 12-17 year olds that are open to smoking, and that there are consistent differences in brand equity over time between demographic sub-groups. We test for changes in correlations between upstream factors such as truth campaign exposure and downstream outcomes such as smoking prevalence over time using six waves of the LMTS (2000-2003). We also test for the association between message receptivity (positive cognitive and affective responses) and truth brand equity. To test these relationships we build Structural Equation Models (SEM) and other models. Having higher truth brand equity has previously been shown to be associated with lower smoking prevalence and campaign exposure. These results demonstrate the long-term effects of brand equity and the reliability of the brand equity multi-dimensional scale. Researchers and practitioners will gain understanding of brand equity as a measure of counter-marketing and the effectiveness of branding as a counter-marketing strategy.

American Legacy Foundation

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GERMANY GOES PROACTIVE – THE FIRST SIX MONTHS OF THE NEW CANCER QUITLINE

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Given their diagnosis, some cancer patients wonder if it is not too late for them to quit smoking anyway. But cancer patients who stop smoking respond more effectively to chemotherapy and radiotherapy than those patients who continue smoking, and they have less overall adverse effects and an increased expectation of life. Since July 16th 2003 smoking cancer patients have the possibility to make use of a Quitline arranged by the German Cancer Aid and the German Cancer Research Center. The affected themselves and their relatives get professional help and advice by experts who not only conduct intensive counseling regarding tobacco cessation but offer regular call-backs to prevent relapse. The Quitline is accessible Monday to Friday from 15.00 to 19.00. The new proactive service is sponsored by the German Cancer Aid and operated at the German Cancer Research Center, where the national Quitline is hosted too. As things move forward systematic referrals from clinics and oncologists will be established. The data and results of the first six months of operation will be presented.

German Cancer Aid

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POS1-025  A STREET-BASED SMOKING CESSATION INTERVENTION: A PILOT STUDY

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The prevalence of tobacco use has remained relatively stable in recent years suggesting that current interventions produced maximal results. Creative interventions are needed to reach those smokers who have been unable or unwilling to quit. This pilot study explored whether giving nicotine replacement therapy (NRT), brief advice, and self-help materials to persons found smoking on the street is an effective smoking cessation strategy. As part of a prior research study, excess nicotine patch and gum that were due to expire, were given to a convenience sample of persons smoking on the street. Participants were asked to fill out an anonymous survey 1 year later. All 11 respondents had made an attempt to stop smoking. Three of the 11 (27%) had totally quit smoking. For the entire group, Fagerstrom Test for Nicotine Dependence (FTND) scores dropped from 6.2 before the intervention to 3.1 after the intervention (p=.01). Of those respondents who continued to smoke, the mean number of days quit was 43 days. This street-based smoking cessation pilot study produced a quit rate that compares favorably to the few published studies on free NRT that report anywhere from 10% to 20% quit rates. Approaching smokers on the street may reach smokers who are unmotivated to attend formal smoking cessation programs. While the sample size is too small to draw any definite conclusions, this pilot study supports future research on providing free NRT to smokers on the street.

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POS1-026  TOBACCO TREATMENT FOR SENIORS: LESSONS FROM THE WISCONSIN TOBACCO QUIT LINE

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It is often thought that older smokers represent hard-core smokers who are unwilling or unable to quit. Further, those interested in quitting may not have access to affordable treatment. Between May and August 2002, the Wisconsin Tobacco Quit Line (WTQL) offered free enhanced services (phone counseling & patches) to smokers aged 65+. We evaluated how well this service was received and its impact based on a random survey of participants at nine months post-enrollment (n=137). Survey respondents were primarily female (70%), Caucasian (89%), and Medicare insured (84%). Although there was no paid advertising, within four months 1800 seniors called and 1300 enrolled among an estimated 70,000 Wisconsin smokers aged 65 and older. Seniors were very interested in receiving both counseling and patches. Most participated fully in the counseling program and reported high satisfaction with services (over 80% spoke with a specialist three+ times and read program materials). Furthermore, 91% set a quit date, 80% made at least one serious quit attempt, and over 43% reported they quit for 30 or more days at nine months post-enrollment. Among those still using tobacco, 80% still wanted to stop and 44% were planning to quit within 30 days. Additional indicators of program acceptance and impact will be presented. Overall, senior smokers are eager to access cessation services and will quit at high rates with a combination of patches and counseling support.

Funding through the WTQL; State of Wisconsin

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POS1-027  INTERNET INFORMATION ABOUT HEALTH RISKS FROM SMOKELESS TOBACCO, CONTENT AND SOURCES

Carl V. Phillips, Ph.D.*, University of Texas School of Public Health, Brian Guenzel, B.S., Center for Philosophy, Health and Policy Sciences

There is widespread misunderstanding that health risk from smokeless tobacco (ST) is similar to that from cigarettes, while the evidence shows it is several orders of magnitude smaller. This undermines harm reduction messages and tells ST users they might as well switch to smoking. The internet is increasingly people’s source for health information. We conducted a systematic review of popular internet information and found that it actively perpetuated the popular misperception. A May 2003 Google search for “tobacco,” “smokeless” and several synonyms, and “cancer” yielded 357 different websites (unique domains) after excluding academic papers and commercial sales sites. We searched each domain to identify claims about the risks of life-threatening disease and any sources of information cited. Almost all the websites unequivocally advocated avoiding ST; Roughly half offered only general assertions that there are substantial health risks from ST. Roughly half provided detailed claims including relative risks, attributable risks, and comparisons to smoking cigarettes. Claims focused on oral cancer risk, usually claiming greater relative risk than is supported by the scientific literature, and virtually never providing the context of absolute risk. Most websites offered no references for their health claims; those that did cited 9 sources almost exclusively. Only a handful of relatively unpopular websites made any reference to studies or experts that provided a balanced perspective on the relevant science. Only 6 made clear that ST is substantially less harmful than cigarettes, compared to more than 100 that explicitly stated or clearly implied that the absolute risks are similar.

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POS1-028  A COMPARISON OF COMPUTER-ASSISTED SCHEDULED GRADUAL REDUCTION VS. SELF HELP IN UNMOTIVATED SMOKERS

Bradford W. Applegate, Ph.D.* William T. Riley, Ph.D. Allison Sowell, M.S.

Despite recent advances in treatment, many tobacco users are unwilling or unable to quit. Harm reduction strategies have recently been proposed as an alternative to current treatment approaches. The present data examines the efficacy of a computerized scheduled reduction program (SGR) as compared to a self-help manual (SH). Participants who smoked > 15 cpd and had no intentions of quitting in the next 30 days (N = 268) were randomly assigned to SGR or SH conditions. The SGR condition monitored use for 7 days, followed by SGR to achieve a 50% reduction. SH participants received information on reducing use. Smoking rates and associated variables were measured at baseline, 9 weeks, and 6 months. Participants smoked 27 cpd and were 46 years old, on average. The sample was 50% male and 59% Caucasian. There were no significant differences between conditions at baseline. Treatment completion was 74% at 9 weeks and 61% at 6 months. Repeated measures MANOVA indicated both main and interaction effects between SGR and SH conditions, (both p’s < .05). SGR participants reduced intake from 27 to 18.5 cpd at 6 months as SGR participants maintained their rates and SH participants increased their rates. SGR participants reduced intake from 27 to 18.5 cpd at 9 weeks, compared to a reduction of 27 to 22 CPD in the SH condition. Effects diminished at 6 months as SGR participants maintained their rates and SH participants reduced smoking to comparable rates. Secondary analyses revealed that a greater proportion of SGR participants achieved > 50% reduction in smoking than SH participants. Changes in health status and motivation to quit were associated with reducing intake, but not sufficiently to justify reduction as a harm reduction approach.

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**POS1-029**

AN INTERNET-BASED VOUCHER PROGRAM FOR SMOKING ABSTINENCE

Irene Glenn*, Taryn Manders, Matt Loeoy, Bethany Raiff, and Jesse Dallery

Abstinence reinforcement therapy is effective in promoting drug abstinence. Few studies, however, have extended this treatment to smokers. The current study is a preliminary investigation of an internet-based voucher program for initiating smoking abstinence. Two carbon monoxide (CO) samples were obtained daily for all conditions. Participants recorded the sampling procedure by using a web cam, and they emailed the video clip from their home to research staff. The effects of the program were evaluated by using an ABCBC design. During the baseline (A) condition, carbon monoxide (CO) samples were obtained twice per day. During treatment (B) conditions, participants could earn vouchers contingent on 10% reductions from the mean baseline CO. After the first negative sample (CO<7ppm), all subsequent samples had to be negative for voucher delivery. During yoked (C) conditions, the vouchers earned in B were “played back” to the participant. The voucher intervention included a progressively increasing schedule of voucher values, bonus vouchers for consecutive negative samples, and a reset contingency for positive samples. Preliminary results suggest that participants initiated abstinence only when vouchers were contingent on reduced or negative CO samples.

NIDA Grant R21DA015289

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**POS1-030**

THE ALEXSA: COMPUTERIZED SELF-REPORT OF CHILDREN’S PREDICTORS OF NICOTINE INITIATION

Ty A. Ridenour, Ph.D., M.P.E.*, Penn State University

Numerous predictors of tobacco use have been identified. However, few longitudinal studies have included self-reports from baseline samples young enough to have not yet initiated tobacco use. One barrier to this type of study is the lack of a self-report assessment of a wide range of tobacco use predictors for children. The ALEXSA (Assessment of Liability and Exposure to Substance use and Antisocial behavior) was recently developed to provide a self-report assessment of over 100 ‘risk and protective factors’ for nine to 12 year olds. Measures selected as model ALEXSA measures from a literature review were those that evidenced good psychometric properties, accounted for unique variance in substance use (including tobacco) or antisocial behavior, and had potential utility for research and intervention. The ALEXSA is computer-administered, requires no minimum reading or writing skills, includes text and audio questions and response options that are professionally cartoon illustrated, and can be tailored to fit the interest of a diversity of projects. Focus groups suggested that children comprehended ALEXSA questions and liked the illustrations. Preliminary test-retest data suggest that ALEXSA measures are reliable; 84% had test-retest reliabilities of .6 or greater. An index of tobacco risk was computed (.90), familial substance abuse (.77), thrill and adventure seeking (.60), girls’ pubertal status (.90), familial substance abuse (.77), thrill and adventure seeking (.31), and parental monitoring (.64).

This project was initiated at Washington University in St. Louis, School of Medicine and is being completed at Penn State. Funding is from NIDA (K01-00434) and Penn State Children, Youth, and Families Consortium.

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**POS1-031**

EVALUATION OF A WEB-BASED COMPUTER-TAILORED SMOKING CESSATION PROGRAM AMONG NICOTINE PATCH USERS

Victor Strecher, PhD* Saul Shiffman, PhD Robert West, PhD

Primary Objective: To assess the incremental benefit of on-line tailored behavioral smoking cessation materials compared to untailored on-line behavioral support materials among nicotine patch users. Methods: Individuals who purchased a qualified nicotine replacement product and enrolled in the offered free behavioral support program were invited to enroll in a research study. At enrollment, subjects were asked questions via the web about their demographics, smoking history, motives for quitting, and perceived barriers or expected difficulties. Over 3,500 enrollees were randomly assigned to either: (1) a web-based computer-tailored smoking cessation program (Committed Quitters Program (CQP)) or (2) web-based untailored behavioral support materials (Control Group). In the CQP condition, characteristics collected at enrollment were used to generate individually-tailored materials based on cognitive-behavioral methods such as reflection, stimulus control, self-efficacy enhancement, and suggestions for coping. Outcome and process data were collected via the web after 6 weeks and 12 weeks. Results: In both intent-to-treat and per-protocol analyses at 6- and 12-week assessments, participants in the tailored CQP reported clinically and statistically significantly higher 28-day continuous abstinence rates than participants in the Control program. Moreover, proper adherence with the nicotine patch and satisfaction with the program were significantly higher in the CQP than in the Control program. Conclusions: The results of this study demonstrate a clear benefit of the web-based CQP. A web-based program that first collects relevant information from the user, then tailors an intervention to the specific needs and interests of the user, appears to have significant advantages over a web-based untailored cessation program. This trial represents, to our knowledge, the first randomized trial of a smoking cessation intervention where both intervention and control conditions were delivered entirely through the web.

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**POS1-032**

WHO ACCEPTS AN INVITATION TO TELEPHONE COUNSELING?

Raymond Boyle*, Leif Solberg, Nico Pronk, Chris Enstad, Jackie Boucher, Steve Asche

Project Help is a randomized trial designed to test the effectiveness of an invitation to participate in telephone counseling proactively offered to members of a large mid-western health plan. Health plan members who filled a prescription for Zyban or nicotine replacement were mailed a letter describing available resources for smoking cessation, including telephone counseling. An equal number of these smokers with and without an ICD-9 code for a chronic disease affected by smoking were randomly selected to be invited by telephone to participate in a telephone course for smoking cessation. The health plan used an existing protocol to contact, track, and counsel smokers in the invitation condition. In this paper we will detail the results of this invitation protocol including the number of smokers reached and the level of engagement in tobacco counseling. In addition we will examine factors that explain participation in telephone counseling among smokers contacted. We will discuss the policy implications of our findings for health plans and researchers seeking to engage smokers in cessation programs.

This research was supported by The Robert Wood Johnson Foundation program, Addressing Tobacco in Managed Care.

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**POS1-033**  
**DOES ADDING TAILORED FEEDBACK TO TELEPHONE COUNSELING IMPROVE QUIT RATES?**  
*Hazel Gilbert PhD, University College London, Stephen Sutton PhD, University of Cambridge*

Many smokers wishing to quit prefer brief counselling offered by telephone helplines to intensive face-to-face support of clinics. While helplines can reach larger numbers, quit rates are lower than that of clinics. Most callers to the UK helpline run by Quit receive single session counselling, and a standard information pack. While counselling can be tailored to the individual, the information pack is generic. In an RCT we investigated whether quit rates could be increased by sending highly tailored computer-generated feedback to reinforce the advice given, and to supplement the information pack. We also explored whether tailored feedback is more effective for particular kinds of smoker. Method: Callers were recruited when they called the helpline (N=1509), and randomised to a tailored feedback group, or to a control group. Participants were assessed at baseline on readiness, dependence, attitudes and self-efficacy measures, and the information used to tailor the intervention. Smoking status was assessed six months after recruitment. Results: While determination to quit and social support significantly predicted abstinence, interactions indicated that the intervention is more effective for smokers than for recent ex-smokers, and may reduce the gap in quit rates between different levels of socio-economic status. Conclusions: This study suggests that individually tailored feedback as an adjunct to telephone counselling can increase quit rates, but work is needed to tailor the feedback to address relapse prevention in the early stages of quitting. These results are also encouraging as smokers are increasingly concentrated in lower socio-economic groups.  
Research supported by the National Lotteries Charities Board, Health and Social Research Programme.  
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**POS1-034**  
**OFFERING TELEPHONE COUNSELING TO SMOKERS USING PHARMACOTHERAPY**  
Raymond Boyle *, Leif Solberg, Nico Pronk, Chris Enstad, Jackie Boucher, Steve Asche

Telephone counseling has generated widespread popular interest as a treatment modality for smoking cessation. We are currently testing the potential of telephone counseling offered proactively in a health plan setting. Project Help is a randomized trial of the effectiveness of an invitation to participate in telephone counseling among members of a large mid-western health plan. Health plan members who filled a prescription for Zyban or nicotine replacement were mailed a letter describing available resources for smoking cessation, including telephone counseling. An equal number of these smokers with and without an ICD-9 code for a chronic disease affected by smoking were randomly selected to be invited by telephone to participate in a telephone course for smoking cessation. Over 1300 smokers were included in the trial, and 76% completed a follow-up survey at three months. In this paper we use an intent-to-treat analysis to report the outcomes at three months by invitation group and across chronic condition. We will report the benefits and limitations of telephone counseling provided to smokers after they begin using medications to quit smoking. In addition we will discuss the policy implications of linking medication use with telephone counseling.  
This research was supported by The Robert Wood Johnson Foundation program, Addressing Tobacco in Managed Care  
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**POS1-035**  
**BARRIERS TO TRANSLATING EMERGING GENETIC RESEARCH ON SMOKING INTO CLINICAL PRACTICE: RESULTS FROM A NATIONAL SURVEY OF PRIMARY CARE PHYSICIANS**  
Alexandra E. Shields, PhD,* David Blumenthal, MD, MPH, Kevin B. Weiss, MD, MPH, Catherine B. Comstock, MPH, Douglas Currivan, PhD, and Caryn Lerman, PhD

The modest success of existing smoking treatments has led to an increasing focus on the contribution of genetic factors to nicotine addiction and treatment outcomes. Emerging research may lead to improved treatments, including tailoring treatment by genotype. However, little is known about physicians' openness to incorporating genetic-based treatments for smoking into clinical practice. In order to assess primary care physicians' attitudes toward potential new genetic-based approaches to smoking treatment, we conducted a national survey of primary care physicians (N=1120; 62.3% response rate). Respondents were randomly assigned to one of 2 scenarios: a scenario in which the new test was described as a “genetic” test to tailor nicotine replacement therapy or one in which the test was described as a “serum protein” test. Controlling for a range of physician characteristics, describing a new test as “genetic” resulted in a regression-adjusted mean adoption score of 73.5 (on a scale of 0-100), versus a score of 82.5 for a non-genetic test, reflecting an 11% reduction in physicians' likelihood of offering such a test to their patients. Considering national estimates of those who smoke on a daily basis, this 11% reduction would translate into 3.9 million smokers who would not be offered a new genetic-based treatment for smoking. Physicians' key concerns regarding adopting the new genetic test included the possibility of stigmatization or health insurance discrimination. While emerging genetic research may lead to improved smoking treatment options, the potential of such novel interventions will likely go unrealized unless barriers to clinical integration are addressed.  
This work was supported in part by a grant from The Robert Wood Johnson Foundation (AS) and a TTURC Grant from the National Cancer Institute P5084718 (CL).  
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**POS1-036**  
**PHYSICIAN EVALUATION OF A HANDHELD COMPUTER SMOKING CESSATION INTERVENTION TOOL**  
Scott M. Strayer*, MD, MPH, University of Virginia, Department of Family Medicine, James R. Martindale, PhD, University of Virginia, Juleen Stephen, MA, University of Virginia, Department of Family Medicine

Physicians are in a unique position to impact national smoking rates, as over 70% of smokers visit a physician annually. Despite this opportunity, smoking cessation counseling only occurs at 23% to 46% of physician office visits. However, research demonstrates that even brief smoking cessation interventions by physicians can be effective. A Handheld Computer Smoking Intervention Tool was created that included: Public Health Service (PHS) Guidelines on Smoking Cessation, smoking cessation drug prescribing information, and a point-of-care fagerstrom tolerance questionnaire that scores automatically and recommends pharmacotherapy for highly dependent smokers. This software tool was evaluated as an intervention among 23 physicians for a period of four months. A pre/post survey using Likert scales and true/false answers for knowledge questions was developed and validated. The survey measured self-reported physician behavior, attitudes, comfort, and knowledge related to smoking cessation counseling before and after use of the software. There was a significant increase in physician comfort levels with smoking cessation counseling (mean increase=2.29, p=.001). There was also a trend toward improved physician behavior and attitudes towards smoking cessation counseling after using the handheld software (mean increase=.44, p=NS). This is the first known report of physician behavior, attitudes, and comfort levels towards smoking cessation counseling changing as a result of a handheld computer software program. Further development and evaluation of this promising technology appears warranted.  
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**POS1-037**

**A COMPUTER-TAILORED INTERVENTION FOR PHARMACY-BASED SMOKING CESSATION COUNSELING.**

"Beth Bock, PhD1, Frederick Bock BS2, Karen Hudmon DrPh, RPh3, James Christian, MSW4. 1)Brown Medical School, the Miriam Hospital; 2)BTTF Inc; 3)UC San Francisco, 4)PHCC.

Pharmacists are uniquely positioned within the community to help smokers quit by providing important behavioral and medication counseling support. However, limited time, training, and resources pose significant barriers to pharmacist’s counseling efforts. Our goal was to develop a practical, economical, evidence-based intervention to assist pharmacists in delivering cessation assistance to their clients. A computer software expert system was used to provide standardized assessments and individually-tailored feedback reports to participants. Parallel, streamlined reports were generated to guide pharmacists in delivering brief yet tailored cessation counseling to each client. Patient feedback provided reinforcement of patient strengths, highlighted areas that needed improvement, and provided tips for quitting. Pharmacist reports outlined key areas for patient improvement and provided counseling suggestions for the pharmacist. The software was installed on laptop computers in the pharmacy waiting area. Fifty consecutive adult smokers (60% men: 46% Hispanic; 36% white; 12% Native American; avg. age=45 years) provided informed consent, used the software program in the pharmacy, and received brief counseling by the study pharmacist. Average assessment completion time was 11 minutes (range= 5–20 min). All participants rated the program “very easy” to use. Most (74%) described the reports as “very helpful” or “excellent” in motivating them to quit. 86% described the pharmacist’s counseling as helpful, and 94% set a quit date. Most participants (92%) completed the one-month follow-up of these, 35% had remained abstinent and were using the nicotine patch at follow-up. This intervention approach was both feasible and highly acceptable to both pharmacists and patients. An efficacy trial is currently being developed.

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**POS1-038**

**IMPACT OF ERIE/NIAGARA TOBACCO FREE COALITION’S QUIT AND WIN AND NRT VOUCHER PROGRAM.**

K. Michael Cummings, MPH, PhD*, Cheryl Hibbee, Andrew Hyland, PhD, Paula Celestino, Terry Alford, Roswell Park Cancer Institute

Objective: To assess the impact of a ‘quit and win’ contest and free nicotine replacement therapy (NRT) voucher program on the smoking behavior of smokers in Erie and Niagara Counties, New York. Methods: The ‘quit and win’ contest offered participants the chance to win $1000 if they remained smoke-free for the month of January 2003, and the NRT voucher program, which was offered at the same time, offered eligible smokers a free two-week supply of NRT. 2,328 entered the program and a random sample of 520 participants were surveyed an average of 7 months after the program took place to assess their smoking behavior and attitudes and opinions about the program. Results: Persons who entered the NRT voucher program were older, white, male, and smoke more cigarettes per day compared to quit and win program participants. Among those who participated in one of the programs, 47% reported the program was ‘very important’ in getting them to think about stopping smoking. 87% reported making a quit attempt since entering the program, and 30% were not smoking at the time of the follow-up. Comparable quit rates were reported for each program. Among the 362 participants who continued to smoke, the mean number of cigarettes smoked per day decreased from 22 to 14 at follow-up. Conclusions: Quit and win and NRT voucher programs prompt large numbers of smokers to take steps toward quitting smoking.

The New York State Department of Health funded this project.

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**POS1-039**

**THE SWEDISH SNUS EXPERIENCE: LESSONS IN HARM REDUCTION FOR OTHER COUNTRIES**

Jonathan Foulds*, PhD & Michael Burke EdD. UMDNJ-School of Public Health, Tobacco Dependence Program, NJ 08852

This paper reviews the effect of moist smokeless tobacco (snus) on smoking and public health in Sweden and the implications for harm reduction policies in other countries. Snus is manufactured in a manner that causes it to deliver much lower concentrations of some toxins than other tobacco products, although it delivers high doses of nicotine. It does not cause cancer or respiratory disease but may have other harmful effects, which are generally of smaller magnitude than caused by smoked tobacco. Over the past 30 years many (around 30%) male ex-smokers in Sweden stopped smoking using snus. As a result, smoking prevalence, lung cancer and heart disease have reduced more quickly amongst Swedish men than Swedish women or men in other countries. It is proposed that this and other low-nitrosamine smokeless products (e.g. NRT, Ariva etc) could have similar beneficial effects on public health if designed to deliver adequate nicotine and effectively marketed at existing smokers.

The authors acknowledge the funding support of New Jersey Department of Health and Senior Services through the New Jersey Comprehensive Tobacco Control Program.

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**POS1-040**

**DELIVERY OF BUPROPION SR AS PART OF A TELEPHONE COUNSELING INTERVENTION FOR VETERAN SMOKERS**

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BACKGROUND: Telephone counseling for smoking cessation has proven effectiveness in the general population, but has not been studied among older, sicker, or heavily-addicted smokers. METHODS: The TELESTOP study is a randomized, controlled trial testing the efficacy of integrated phone counseling and innovative medication delivery among smoking veterans, with medications mailed directly to subjects in the intervention group. Veterans requesting pharmacotherapy are screened for contraindications, and if bupropion is requested, staff obtain permission of the subject’s primary care provider before sending medications. RESULTS: 418 subjects were enrolled in the intervention arm, 203 subjects requested bupropion and 83% reported one or more potential contraindications, of which the most common were drinking more than three alcoholic beverages per occasion (26%), current use of other antidepressants (23%), and history of stroke (7%). History of seizures was rare (2%). Of those who had contraindications to bupropion, 91% were approved to receive the medication by their primary care provider. Overall, 375 subjects (90%) used any pharmacotherapy and 179 (43%) used bupropion. No seizures were reported among bupropion users, and the rate of serious adverse events did not differ between the intervention and control groups. CONCLUSIONS: Veteran smokers expressed strong interest in using bupropion. Although potential contraindications are common, bupropion SR was safely delivered as part of this telephone counseling intervention with older and sicker smokers.

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**POS1-041**

**Efficacy of Bupropion SR and Individual Counseling Among Adults Attempting to Quit Smoking**

Danielle E. McCarthy, M.S.*, University of Wisconsin-Madison, Thomas M. Piasecki, Ph.D., University of Missouri-Columbia, Daniel L. Lawrence, Ph.D., Michael C. Fiore, M.D., M.P.H., & Timothy B. Baker, Ph.D., University of Wisconsin-Madison

In this randomized placebo-controlled clinical trial, access to active bupropion SR and eight sessions of brief individual smoking cessation counseling was manipulated. Eligible adults (N=463) who smoked at least 10 cigarettes per day and reported being motivated to quit smoking were assigned to receive either active or placebo medication and either individual counseling or a non-counseling attentional control condition. Seven-day point-prevalence abstinence rates confirmed by carbon monoxide testing at the end of treatment (two months post-quit) were calculated. In an intent-to-treat analysis, 17.7 percent of participants assigned to the control condition were abstinent at the end of treatment. Abstinence rates increased non-significantly to 19.8 percent when counseling was added to the placebo condition. Participants in the active medication condition achieved abstinence rates over 30 percent, whether they received counseling (35.4 percent) or not (31.0 percent). A logistic regression analysis revealed a significant beneficial effect of bupropion SR. There was no significant beneficial effect of counseling.

This research was funded by a grant from the National Cancer Institute (P50CA84724).

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**POS1-042**

**Smoking Treatment Outcomes and Media tors: Primary and Secondary Results From a Randomized Controlled Trial of Acceptance Based Treatment With Bupropion**

Elizabeth V. Gifford, Ph.D.*, Veterans Affairs and Stanford University Medical Centers, Barbara S. Kohlenberg, Ph.D., University of Nevada School of Medicine, Steven C. Hayes, Ph.D., University of Nevada, Reno, David O. Antonuccio, Ph.D., Melissa M. Piasecki, M.D., University of Nevada School of Medicine, Whitney Waldroup, M.P.H., Veterans Affairs and Stanford University Medical Centers

It has been noted that the smoking cessation field needs new treatments with theoretically specified, innovative behavioral mechanisms of action. Similarly, benefits may derive from treatments with theoretically specified relationships between behavioral and pharmacological components. This presentation reports the final results of a NIDA Stage One treatment development project piloting a theoretically based behavioral and pharmacological treatment for smoking. The treatment integrated a novel acceptance based behavioral treatment with slow release bupropion, specifying behavioral mechanisms of action and their combination with an established pharmacological treatment. As an initial test, the combined treatment was compared with bupropion SR in a randomized controlled trial with 307 participants. As expected, the combined condition incorporating the relationship focused acceptance treatment resulted in significantly higher quit rates than the medication alone (60% versus 22% at post treatment, p <0.05). Importantly, as specified by the theory, avoidance and inflexibility mediated the outcomes of the combined condition, lending preliminary support to the underlying theory of change.

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**POS1-043**

**Predictors of Willingness to Provide Buccal Cells for Genotyping in a Smoking Cessation Effectiveness Trial**

Lisa M. Jack* (1), Gary E. Swan, (1), Caseye Luce (3), Harold S. Javitz (1), Susan J. Curry (2), Tim McAfee (3). (1)SRI International, (2)University of Illinois, Chicago, (3)Group Health Cooperative

This study was conducted as part of an open-label, randomized trial involving 1,524 participants randomly assigned to receive a combination of bupropion SR and counseling in a large health care system. Participants were assessed for pretreatment nicotine dependence and completed follow-up surveys three and 12 months from quit date to determine seven-day point prevalence of smoking. Of the 1,299 individuals who were contacted at the 12-month follow-up, 993 (76.4%) agreed to be sent materials to collect buccal cell samples; of these, 496 (49.9%) provided samples sufficient for DNA analysis. Compared to those agreeing to be sent materials for buccal cell collection, those who refused (n = 306) had fewer years of education, scored lower on intrinsic self control, were more likely to be male, and were more likely to have been identified as smoking at the three month follow-up (overall significance of stepwise multiple logistic regression model chi-square, p < 0.0001). Compared to those who agreed to receive collection materials and then returned them for analysis, those who agreed to receive materials but failed to return a sample were younger, more likely to be male, had higher levels of intrinsic health concerns, and were less likely have returned the three-month follow-up questionnaire (overall significance of stepwise multiple logistic regression model chi-square, p < 0.0001). These results suggest that approaches to increasing the overall rate of acceptance and adherence to buccal cell collection procedures (40.3% in this study) are needed to decrease potential sample bias in pharmacogenetic investigations of treatments for smoking cessation.

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**POS1-044**

**Effectiveness Trial of Zyban for Smoking Cessation in the Outpatient Setting**

Scott M. Strayer, MD, MPH*, University of Virginia, Department of Family Medicine, Amy Flusche, PharmD, Saint Louis University Family Practice Residency, Joshua Hodge, MD, Saint Louis University Family Practice Residency, James R. Martindale, PhD, University of Virginia

Bupropion (Zyban) has been shown to be one of the most efficacious treatments for smoking cessation, and is currently recommended as first-line medical therapy. To date, efficacy studies with bupropion have been done in tertiary care centers or specialty clinics representing higher levels of intervention than might be available in a typical primary care setting. Research on bupropion use and efficacy in primary care settings has been very limited to date. This was a randomized clinical trial of 100 smoking patients who were in the action stage of smoking cessation in an academic family practice setting. All patients received bupropion, and were randomized to either the Zyban Advantage Plan or intensive behavioral modification treatment groups. Patients were followed for 6 months, and self-reported 7-day point prevalence abstinence rates were compared between groups. The two groups were similar demographically and in smoking characteristics. There was no clinical or statistically significant difference in cessation rates between the two groups at 6 months. The average cessation rate at 6 months was 27% among both groups. We report the first known effectiveness results of bupropion in the primary care setting. Intensive behavioral modification added no clinically significant benefit over personalized self-help and telephone counseling (Zyban Advantage Plan). This effectiveness trial showed similar cessation rates to previous efficacy trials.

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POS1-045  EFFECTS OF EXPOSURE OF YOUTH AT RISK FOR SMOKING TO TELEVISION ADVERTISING FOR NICOTINE REPLACEMENT THERAPY AND ZYBAN

Melanie Wakefield,* The Cancer Council Victoria, Australia; Russell Durrant, University of Waikato, NZ

Television advertising for nicotine replacement therapy (NRT) and Zyban exposes the entire population, including teenagers, to persuasive messages about these products. There is a risk that teenagers exposed to such advertising might underestimate addiction or perceive an unintended message that it is easy to quit. This is of concern, since optimism about quitting is a major predictor of trial and progression to heavier smoking among youth. We randomly allocated 492 youth aged 12-14 years to one of three viewing conditions where they viewed either: a) four NRT ads; b) four Zyban ads; or c) four ads promoting non-pharmacological cessation services, such as telephone quitlines. After viewing each ad, they completed a brief rating form. After all ads had been viewed, they completed a questionnaire which measured intentions to smoke, perceived effectiveness of smoking, perceived risks and benefits of smoking, and need for pharmaceutical products and services. There were no differences in group composition by age, gender or smoking uptake. Compared to the Quitline ads, youth were more likely to agree that the NRT and Zyban ads made it seem easy to quit smoking (p<.001). However, there were no systematic differences between groups in perceived addictiveness of smoking, intentions to smoke or other outcomes. This study is one of the first to furnish information to help assess the risks of advertising for NRT and Zyban, alongside the established benefits. It suggests that although these ads may create 'face value' impressions that it is easier to quit, when exposure is equal, such appraisals do not undermine important perceptions about smoking.

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POS1-046  FLUCTUATIONS IN MOOD STATE AS A FUNCTION OF NICOTINE WITHDRAWAL

*Sadie Alexander-Emery, M.A., Holly Morrell, B. S., Charlene Key, Lee M. Cohen, Ph.D., Texas Tech University, Mustafa al’Absi, Ph.D., University of Minnesota School of Medicine

Smoking cessation produces nicotine withdrawal, a syndrome characterized by irritability, sleep disturbance, impatience, hunger, difficulty concentrating, depression, and anxiety (DSM-IV-TR, 2000). Although several instruments have been developed to assess withdrawal symptoms, few have been used to evaluate effects of nicotine abstinence on specific psychological constructs. The present study used the Profile of Mood States (POMS; McNair et al., 1971), a self-report mood state inventory, to examine alterations in mood among heavy smokers (22 male, 8 female) across three conditions: brief abstinence from smoking (3.5 hours), extended abstinence (18 hours), and smoking control. A 3 x 6 (Day x POMS subscale) repeated measures ANOVA revealed a significant Day x Subscale interaction (p < .01). Significant simple main effects were found for each subscale across all three days, except for the Fatigue-Inertia subscale. Post hoc analyses indicated that smokers exhibited greater levels of anger/hostility and anxiety/tension in the extended abstinence condition as compared to both the brief abstinence and smoking conditions. Additionally, smokers in the smoking condition displayed lower levels of confusion/bewilderment than in the brief and extended abstinence conditions. Finally, smokers reported more vigor in the smoking condition than in the extended abstinence condition. Results implicate that mood fluctuates as a function of differing levels of nicotine abstinence, supporting existing research linking negative mood states and nicotine withdrawal. Additionally, results highlight the utility of the POMS for assessing psychological states as components of nicotine withdrawal.

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POS1-047  PHYSIOLOGICAL AND PSYCHOLOGICAL PREDICTORS OF NICOTINE WITHDRAWAL INTENSITY

*Holly Morrell, B. S., Sadie Alexander-Emery, M.A., Charlene Key, Lee M. Cohen, Ph.D., Texas Tech University, Mustafa al’Absi, Ph.D., University of Minnesota School of Medicine

Studies implicate symptoms of depression and anxiety, as well as physiological variables such as heart rate and blood pressure, as components of nicotine withdrawal and determinants of withdrawal intensity. These studies focus on long-term nicotine withdrawal and neglect symptoms that occur within hours of abstinence. This study investigated predictors of nicotine withdrawal intensity across varying levels of short-term abstinence in dependent smokers. Heart rate, blood pressure, depression, and anxiety were assessed across 3.5 and 18 hour abstinence, as compared to a smoking control condition. Hierarchical regression analyses revealed that the structure of withdrawal differed across levels of abstinence. Heart rate, blood pressure, and depression significantly predicted withdrawal intensity in the smoking control condition (p < .01). Depression and anxiety significantly predicted withdrawal intensity in both the brief (p < .01) and extended abstinence (p < .01) conditions. Depression was a stronger predictor of withdrawal intensity in the extended abstinence condition than in the brief abstinence condition, and consistently accounted for a greater proportion of the variance in withdrawal intensity than anxiety. This study demonstrates that the structure of nicotine withdrawal fluctuates across short periods of abstinence. Results also indicate that physiological correlates of nicotine abstinence such as heart rate and blood pressure do not actually predict the intensity of nicotine withdrawal. Instead, psychological factors such as depression and anxiety contribute significantly to the intensity of the withdrawal syndrome.

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POS1-048  THE INFLUENCE OF BASELINE DEPRESSION AND ALCOHOL USE ON SMOKING CESSATION OUTCOMES

Kevin E. Vowles, M.A., West Virginia University, VA Connecticut Healthcare System; & Judith L. Cooney, Ph.D.*, VA Connecticut Healthcare System, University of Connecticut School of Medicine

Depressed individuals and heavy alcohol users are less likely to successfully quit smoking. The present analyses evaluated how baseline depressive symptoms and alcohol use influenced smoking cessation at two short-term time points in treatment: a program-designated quit day and one week following quit day. Participants included 223 veterans, primarily male, enrolled in a V.A.-based smoking cessation program that offered behavioral and pharmacological treatments in three weekly two-hour meetings. Standardized measures of depression (including CES-D) and alcohol use were completed immediately before treatment; carbon monoxide (CO) level and self-reported cigarette use were measured at each meeting. Patients were to stop smoking at midnight the night before the second meeting. Self-reported cigarette consumption was unrelated to depression and alcohol use at both weeks, although positive relations with CO levels occurred. Regression analyses, which controlled for session attendance, indicated that lower week two (quit day) CO levels were associated with lower levels of both depression, r2 = .10; Beta = .27; p < .01, and drinking frequency, r2 = .04; Beta = .14; p < .05. Further, drinking frequency predicted week three CO levels, r2 = .06; Beta = .17; p < .05. These findings illustrate that higher baseline depressive symptoms and alcohol use can negatively influence initial quitting behaviors. Further, more frequent alcohol use was associated with difficulties in maintaining cigarette abstinence and increased probability of rapid relapse.

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POS1-049 THE RELATION BETWEEN SLEEP DISTURBANCES, STRESS, AND PATTERNS OF CIGARETTE SMOKING: RESULTS FROM THE NATIONAL STUDY ON MIDLIFE DEVELOPMENT

Scott P. Novak, Ph.D.* Charles J. Neighbors, Ph.D., MBA.

The prevalence of sleep deprivation in the United States is widespread, and negatively impacts numerous psychosocial domains, including irritability, attentional deficits, depressive mood, and physical fatigue. Moreover, the cause of sleep disturbances may be linked to psychosocial (e.g., job performance) and psychiatric (Major Depressive Disorder) stressors as well as other behavioral risk factors (e.g., substance use). In this study we examine the association between sleep disturbances and levels of daily cigarette smoking in relation to dimensions of psychological distress. The data are drawn from a nationally probaly sample of non-institutionalized English speaking adults (aged 25-74) residing in the United States. Respondents (n=3,032) participated in an initial telephone interview and a follow-up mailed questionnaire. Over 21% of the sample were daily smokers and chronic sleeping problems were highly prevalent, with 12.9% reporting chronic sleeping problems over the past year. Moreover, 51.3% experienced at least one episode of sleep disturbance in the previous month, and over 7% reported difficulty falling asleep every day or nearly every day. Among those reporting chronic sleep problems in the past month, 36% were daily smokers whereas 23% of those reporting none or episodic (e.g. a couple of times per month) sleep disturbances smoked daily. Conversely, among daily smokers, 10% had chronic sleep disturbances compared to 6% of the non-daily users and non-smokers. Next, we examined the co-occurrence of sleep and smoking within classes of psychological distress using latent class analysis (LCA). Despite the widespread prevalence of sleep disturbances, serious psychiatric disorders were concentrated among those exhibiting chronic sleep difficulties (e.g. multiple sleep disturbances per week). Additional studies are needed to elucidate the complex pathways between psychological distress, sleep disturbances, and smoking.

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POS1-050 MENTAL MENTAL ILLNESS AND NICOTINE ADDICTION: A COMMUNITY TREATMENT TRIAL OF CONTINGENT REINFORCEMENT AND NRT

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Adults with any DSM-IV diagnosed mental illness smoke nearly half of the cigarettes in the U.S. (Lasser, et al. 2000). Our study focuses on persons with serious mental illness (PSMI) because national data suggests that: (1) their smoking rate is 2-3 times higher than in the general population; (2) cessation interventions for this population are understudied; (3) most cessation studies exclude PSMI; (4) cessation would mean health care savings; and (5) this population can spend up to 40% of their generally low disability income on cigarettes (Glassman, 1993; Ziedonis and George, 1997; Ziedonis, et al. 1994). Our study compares two interventions designed to promote PSMI smoking cessation: contingent reinforcement, and contingent reinforcement plus nicotine patches. The efficacy of each of these interventions is compared with the other and a self-quit control group. Persons are recruited from community Behavioral Health clinics. Those in the intervention groups are randomly assigned to one of the two treatments for a 16-week active treatment phase with a nine-month follow-up. They receive either progressively escalating contingent financial compensation for achieving and maintaining abstinence alone, or this intervention plus 21mg patches. Measures include breath CO, saliva cotinine, assessment of psychological symptoms and well being, smoking craving, and self reported smoking. Thus far 42 participants have been enrolled and 15 have completed interventions. Preliminary data suggests that 53% of the active participants have quit or are smoking significantly less. Additional process data analyses and observations regarding successful strategies for engaging and motivating this challenging population of smokers will also be presented.

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POS1-051 HEALTHCARE PROVIDERS KNOWLEDGE OF TOBACCO-RELATED ISSUES INCLUDING DRUG INTERACTIONS WITH NICOTINE


Purpose: Healthcare providers (HCPs) rarely do more than advise patients to quit smoking, hardly ever supporting patients through the actual quitting process. In order to further understand this barrier towards successful quitting, we studied healthcare providers (RNs / MDs) understanding and knowledge regarding tobacco dependence. Methods: Anonymous survey of multiple-choice questions regarding topics like: prevalence of smoking, tobacco treatment guidelines, pharmacotherapy (what is OTC vs. prescription), interaction of nicotine with other drugs, symptoms of nicotine withdrawal. Surveys were distributed by key personnel at 8 healthcare institutions across NY State; and evaluated using SAS® Results: 352 HCPS (262 MDs, 90 RNs) completed survey: 22% RN and 46% MD (p<0.0001) answered correctly the prevalence of U.S.A. smoking. Although only 7% RNs and 4% MDs knew the guidelines for tobacco treatment; 71% RN and 77% MD said they advised patients to quit at every visit. 14% RN and 17% MD knew which FDA approved medications were available OTC and 7% RN and 8% MD knew which required a prescription. Only 1% of RNs and MDs identified correctly the signs and symptoms of nicotine withdrawal. 40% of RNs and 50% of MDs answered correctly, true to “insulin requirement decreases with cessation of smoking.” 24% RNs, 26% of MDs answered correctly, true to “requirements for warfarin (a blood thinning medication) are less with the cessation of smoking.” Conclusions: Successful tobacco dependence treatment relies on the understanding of the epidemiology of the disease, manifestations, and treatment guidelines. Awareness of the implications of abrupt cessation in the hospitalized patient will result in improved patient safety issues such as decreased adverse drug reactions and better health outcomes.

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POS1-052 EFFECTIVENESS OF NRT AND ANTI- DEPRESSANTS FOR SMOKING CESSATION IN CALIFORNIA: AN UPDATE FROM THE 2002 POPULATION SURVEY.

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Using population surveys in California in the 1990s, we previously reported that the effectiveness of NRT for smoking cessation declined after becoming available over-the-counter in 1996 (JAMA 2002:288:1260-1264). Pharmaceutical-aid use was again queried in the 2002 California survey. NRT use for smoker’s most recent quit attempt increased gradually from 9.3% (1992), to 12.7% (1996), to 14.4% (1999), and to 15.7% (2002). Antidepressant use was much lower at 5.2% (1999) and 6.1% (2002). Using an actuarial analysis, we report a summary effective measure (percentage improvement; PI) of pharmaceutical-aid use compared to non-use in achieving continuous abstinence at 1, 3 and 6 months post cessation. We consider only moderate-to-heavy smokers with a quit attempt (n=1,257 in 2002). These analyses suggested a decline in the short-term effectiveness of NRT for cessation in 2002, in addition to the decline in longer-term effectiveness reported previously. The PI at 1 month declined from 45% (1996), to 36% (1999) and to 21% (2002). The PI at 3 months was stable, 15% (1999) and 16% (2002), after the decline from 46% (1996). Similarly, the PI at 6 months was stable at 5% (1999) and 7% (2002) after a decline from 34% (1996). Given low usage rates, we combined 1999 and 2002 survey data to obtain estimates for the effectiveness of antidepressant use for smoking cessation. At 1 month, the PI have 71% completed, and 3 months and 20% at 6 months. These data suggest that antidepressants may be an effective cessation aid for the small proportion of smokers for whom California doctors are willing to prescribe them.

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POS1-053 SELLING HELP OR FALSE HOPE? A COMPARISON OF CLAIMS BY “TRADITIONAL” AND “NON-TRADITIONAL” CESSATION PRODUCTS

Matthew B. Barry*, MPA, Campaign for Tobacco Free Kids

This paper will compare and contrast the health claims being made (on the product labeling and on Internet websites) for both “traditional” (e.g., FDA-approved) and “non-traditional” (e.g., not FDA-approved) tobacco use cessation products. This paper will highlight both the enormous numbers of products that do not fall under the auspices of FDA oversight and the claims being made by these unregulated products in terms of their ability to help consumers achieve either long-term abstinence, reduce smoking, or temporarily suppress withdrawal symptoms. This paper will help raise awareness among SRNT members to the large number of products on the market (both in the U.S. and internationally), the lack of peer-reviewed, scientific data about the safety and effectiveness of these products (do they work and are they safe?), and the potential for these products to have a negative impact on public health if they do not in fact do what they claim. Specifically, if these unregulated products do not work or are not safe, will they discourage tobacco users who are concerned about their health or who are interested in quitting from making further quit attempts with products and techniques that are evidence-based and are proven to be safe and effective? No Funding

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POS1-055 OPTIMISING THE USE OF NICOTINE REPLACEMENT PATCHES IN UK GENERAL PRACTICE.

Karen Brown BA(*), Kate Roberts MSc, C.Saunders, M.Drury MRCP, E.Johnstone PhD, R.Walton MD, M.Murphy FFPHM, Cancer Research UK, University of Oxford.

Increased understanding is required to assess if differing levels of behavioural support (with NRT) makes an acceptable difference to quit rates in general practice. Genetic studies may further help understand the neural basis of addiction and enable therapy to be tailored more appropriately to individuals. ‘Patch in Practice’ (PiP) is an open randomised controlled trial of two levels of support using 15mg/16hr nicotine patches in UK General Practice. The study aims to: a) assess whether level of support affects success of quit attempt, b) explore whether an individual’s response to NRT is influenced by genetic variation, c) test whether the ‘level of nicotine replacement’ influences a smoker’s severity of withdrawal and ability to quit. PiP aims to recruit 1000 moderately addicted (more then 10per day) smokers who are motivated to quit. 400 people have been recruited so far. Smokers are offered two months of NRT treatment and followed up for a year. Early results on 147 subjects indicated 54% are female. 52% were randomised to moderate support. The mean age of smoking initiation was 16.5 yrs. Age of the participants ranged from 20-74yrs. 57% self-reported complete abstinence at Visit Two confirmed by a carbon monoxide reading of 10ppm or less. Patch nicotine delivery in 60 recruits indicated the mean replacement level (measured by blood and salivary cotinine), is about 50% but with wide individual variation. PiP will continue until recruiting until March 2004. From our experience smokers will participate in clinical studies and give samples for genetic testing.

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POS1-054 “TIPS FOR USING NICOTINE PATCH, GUM AND LOZENGE”: USE OF A BROCHURE IN SMOKING TREATMENT AND RESEARCH

Beth Quinio Edwards*, Lynn T. Kozlowski, Richard J. O’Connor, Spring C. Cooper, Mona M. Counts, and Frank M. Ahern Department of Biobehavioral Health (BOE, LTK, RJO, SCC, FMA) and School of Nursing (MC) The Pennsylvania State University

We developed a brief clinical intervention to encourage smokers at a rural, nurse practitioner run clinic to try quitting (or try quitting again) by recommending that nicotine replacement therapies (NRT) can safely be used long-term (beyond the recommended 10-12 weeks) to treat smoking. Two focus groups (6-10 participants) showed that smokers wanted to quit smoking but weren’t interested in using NRT long-term because of problems using it in prior quit attempts. To encourage trying NRT again, we developed a brief ‘tips’ brochure highlighting ways to avoid common mistakes. This brochure also standardized an experimental manipulation during clinical visits advising long-term NRT use. Pilot testing (n = 27) showed most participants found the brochure informative. Post-clinical interviews indicate the duration-of-use manipulation was effective: in the first 61 study participants, those receiving the experimental message more commonly reported acceptability of long-term NRT use to prevent smoking than those receiving the standard NRT message (p<.01). This work indicates: 1) failure to quit smoking using an NRT product may discourage one from trying again, 2) the development of techniques for preventing and addressing problems using NRT may be useful to promote cessation and 3) use of a brochure may be a valuable clinical tool to promote cessation attempts and standardize brief interventions.

The Robert Wood Johnson Foundation

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POS1-056 REVIEW OF NICOTINE DEPENDENCE AS AN EFFECT MODIFIER OF THE RELATIONSHIP OF NICOTINE REPLACEMENT THERAPY AND CESSION.

Michael O. Chaiton*, University of Toronto.

Many studies have demonstrated that smokers are assisted in quitting smoking using nicotine replacement products (NRT), however, a review by Tang et al. (1994) suggested that low dependent smokers were not assisted by NRT. This paper is a meta-analysis of the effect of nicotine dependence in randomized control trials of nicotine replacement therapy. Since the Tang et al. review, there have been additional trials of nicotine replacement therapy and this paper aims to examine if the relationship found by Tang et al. (1994) has remained consistent since that time. The purpose of this review is to examine the interaction of nicotine dependence and NRT on smoking cessation. The online databases, Medline, Embase, Healthstar, and CINAHL were searched for studies of randomized control trials of NRT of healthy adult populations compared high and low dependent smokers using a measure of dependence developed by Fagerstrom. Studies were limited to those published after the Tang et al. (1994) review. Studies were assessed for relevance and quality. An all-inclusive approach to study inclusion was taken to reduce bias in weighting or excluding trials on the basis of methodology. Six studies published since 1990 that met all the inclusion criteria and where data could be extracted were included. The combined OR for the studies without stratifying for dependence was 1.79 (1.22, 2.64), which was significantly greater than one (p-value, <0.0001). The odds of success of nicotine replacement therapy in the high dependence stratum were 2.53 (1.68, 3.85: p-value<0.001). However, NRT was less effective in the low dependence stratum, OR 1.22 (0.72, 2.06: p-value=0.47). The efficacy of nicotine replacement therapy depends on the level of dependence. Targeting nicotine replacement therapy to high dependent smokers may improve the success rate of the intervention.

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POS1-057  MOTIVATION AND PATCH TREATMENT FOR HIV-POSITIVE SMOKERS: PSYCHOSOCIAL BARRIERS TO CESSION

Raymond Niaura, PhD*, Elizabeth E. Richardson, PhD, Cassandra Stanton, PhD, Susan Carton-Lopez, BA, Kathleen Morrow, PhD, William Shadel, PhD & George D. Papandonatos, PhD

For the first time since the beginning of the HIV epidemic, many individuals with HIV are faced with the prospect of living longer, healthier lives. Cigarette smoking is highly prevalent among HIV+ individuals and, in addition to the negative health consequences commonly resulting from smoking, poses unique health risks to those with HIV. Positive PATHS is designed to evaluate a clinic-based motivational smoking cessation intervention among HIV+ smokers in Southern New England. Participants are randomized to receive either a brief intervention (standard care; SC) modeled on PHS guidelines versus a more intensive motivational counseling intervention (MI), with both interventions providing 8-weeks of NRT to those setting a quit date. Among participants enrolled thus far, (Ns 356, mean age 43 years), 50.2% are White, 24.6% are Black, and 15.5% are Latino. Overall, the sample endorsed moderate nicotine dependence (FTND mean=5.0, sd=0.9) and smoked an average of 23 (sd=11.5) cigarettes per day. Participants were motivated to quit, with 78% reporting thinking about quitting and 73.4% setting a quit date at baseline. Over 80% of participants scored 16 or higher on the CESD, suggestive of clinical depression, with greater depression rates among minorities. Assessment of the number and qualities of people providing social support to the participant indicates that participants reported a lack of social support, with almost half (47%) of these being smokers. These findings at baseline point to the acute challenges and barriers that HIV+ smokers face in their attempt to quit smoking. Treatments targeting this population must take these factors into account.

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POS1-058  BOTH SMOKING REDUCTION WITH NRT AND MOTIVATIONAL ADVICE INDUCE CESSATION AMONG UNMOTIVATED SMOKERS

Matthew Carpenter*, John Hughes, Laura Solomon, & Peter Callas

Given the plateau in smoking prevalence over the past decade and the possibility that existing smokers may be more dependent, new strategies may be necessary to motivate smokers to attempt to quit. Smoking reduction (decreasing cigarettes per day) may be one such “foot in the door” strategy for smokers who are unmotivated to quit when abrupt cessation is the only alternative. Reduction may lead to future cessation if it serves to increase self-efficacy and/or motivation to quit. On the other hand, reduction may undermine future cessation if smokers perceive reduction as an alternative to quitting. Although preliminary evidence suggests that smoking reduction may promote future cessation, no experimental test exists, and the relationship between smoking reduction and future cessation remains unclear. In the present study, smokers not currently interested in quitting (n=616) were randomized to receive brief telephone-based a) reduction counseling + mailed nicotine replacement therapy (NRT) + brief advice to quit, b) motivational advice (USPHS guidelines) + brief advice, or c) no treatment. More smokers in the reduction (43%) and motivational (51%) conditions made a 24-hour quit attempt over 6 months than smokers in the no treatment condition (16%; p<.01) but the two active conditions did not differ (p>.05). Similarly, 18%, 23% and 4% of each condition were abstinent (7-day point prevalence) at six months (p<.01). Our results indicate smoking reduction with adjunctive NRT does not undermine cessation but rather increases the likelihood of quitting to a degree similar to motivational advice.

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POS1-059  EFFECTS OF DIFFERENT NICOTINE REPLACEMENT THERAPIES ON POST-CESSATION PSYCHOLOGICAL RESPONSES

Andrew A. Strasser, Ph.D.*, Vyga Kaufmann, M.A., Christopher Jepson, Ph.D., Kenneth A. Perkins, Ph.D., Wallace B. Pickett, Ph.D., E. Paul Wileyto, Ph.D., Margaret Rukstalis, M.D., Janet Audrain-McGovern, Ph.D., Caryn Lerman, Ph.D.

Transdermal nicotine patch (TN) and nicotine nasal spray (NS) are both efficacious forms of smoking cessation treatment, but have different pharmacokinetic properties and modes of action. To understand better psychological responses to treatment, we investigated the effects of TN versus NS on positive affect, negative affect, and withdrawal symptoms during treatment. Participants were randomly assigned to receive TN (N = 172) or NS (N = 163) plus 7 sessions of behavioral counseling, and completed self-report questionnaires at pre-treatment and during treatment. TN participants, but not NS participants, reported significant increases in positive affect during treatment. Increases in negative affect and withdrawal were observed, independent of treatment. Only changes in negative affect predicted relapse by the end of the treatment phase. These findings indicate that, although TN may enhance positive affect for smokers in treatment compared to NS, only changes in negative affect predict treatment outcome.

This study was supported by Transdisciplinary Tobacco Use Research Center grant P50-CA84718 from the National Cancer Institute and National Institute on Drug Abuse.

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POS1-060  POST-INTERVENTION EFFECT OF NRT ON SMOKING REDUCTION: A RANDOMIZED TRIAL

*Jean-Francois ETTER Evelyne LASZLO Thomas PERNEGER

We assessed the post-intervention effect of nicotine replacement therapy (NRT) on reduction of cigarette consumption. 1.5 year after the end of a 6-month treatment. Heavy smokers who had no intention of quitting smoking were recruited from the general population and randomly assigned to either a treatment of cigarette (choice between a 15 mg nicotine patch, a 4 mg nicotine gum, and/or a 10 mg nicotine inhaler, n=265), matching placebo products (n=269), or no intervention (n=389). Products were sent to participants by mail. Education was limited to a booklet. Of 923 participants, 879 (95%) were followed 6 months after randomization and 846 (92%) after 26 months. Mean baseline consumption was 30 cigarettes per day in all groups. After 6 months, cigarette consumption had decreased by a mean of 10.9 cigarettes per day in the nicotine group, 8.7 in the placebo group, and 4.9 among controls (p<0.02 for all pair-wise comparisons). After 26 months, cigarette consumption had decreased by a mean of 9.8 cigarettes per day in the nicotine group, 7.7 in the placebo group, and 7.7 among controls (nicotine versus placebo or control: p<0.03). After 2 years, smoking cessation rates did not differ significantly between groups. We observed a slight effect of NRT on reduction of cigarette consumption was maintained, 1.5 year after the end of the 6-month treatment, but the initially observed placebo effect was not. NRT for smoking reduction had no deleterious impact on smoking cessation.

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POS1-061 A COMPARISON OF THE EFFECTIVENESS OF TWO DIFFERENT REGIMENS IN A SMOKING CLINIC

Scott E. Sherman, MD, MPH* Ileana Aldana, MPH

While many studies have examined the efficacy of different smoking cessation therapies, few have assessed their effectiveness in everyday clinical practice. We compared bupropion versus bupropion plus nicotine patch in routine practice at a Veterans Administration Smoking Cessation Clinic (SCC). Our goal was to compare patient eligibility, side effects and tolerability, and effectiveness for the two regimens. All patients referred to the SCC were asked to participate in the study, which included random assignment to treatment, baseline and follow-up surveys, and medical record review. The SCC consisted of 7 visits over 2 months, with patients receiving individual counseling from both a health educator and clinical pharmacist at each visit. Analyses were conducted based on the initial treatment assignment. Of 708 patients referred to the SCC, 388 (55%) attended at least one session and 274 (71%) consented to participate in one or more parts of the study. Of the 274 study patients, 89% were eligible to receive either treatment regimen. Side effects were more common in the combined therapy group (70% vs. 55%, p=0.05). Treatment regimens were changed in 14% of patients started on combination therapy vs. 7% of patients started on bupropion alone (p=0.10). The 2-month SCC was successfully completed by 38% of the combined therapy group and 26% of the bupropion group. Abstinence rates at 6 months were similar between the two groups. We conclude that most patients referred to the SCC are able to take these medications. While side effects are more common with combination therapy, there may not be a difference in the rate of switching treatments. The success rate was higher at 2 months but not at 6 months.

California Tobacco-Related Disease Research Program (Grant #BRT-0068)

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POS1-062 INTEREST IN RECYCLING AMONG RELAPSED SMOKERS

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Recycling relapsed smokers towards treatment for smoking cessation is a promising approach to re-engage smokers in the quitting process. The RESET study is a multi-center RCT testing a strategy to stimulate recycling. Participants were randomized to active treatment versus usual care. This analysis reports on the active treatment group participants’ interest in recycling and treatment preferences. Subjects were identified from the Department of Veterans Affairs (VA) Pharmacy Benefits Management database. Subjects were eligible if they received a prescription for a tobacco dependence medication (nicotine replacement therapy or bupropion SR) from one of five participating VA Medical Centers in the past year. The intervention included a patient phone call to collect information on smoking status, interest in quitting and treatment preferences which was followed by a computerized progress note sent to the patients’ health care provider to communicate information from the patient phone call. 951 eligible subjects were randomized to the intervention group and called 4 to 9 months after the original prescription fill date. 599 subjects (63% response rate) were reached and consented for the telephone interview. 357 of 599 participating subjects (60%) had relapsed to smoking. Most relapsed smokers were interested in quitting (65% within 30 days, 91% within 6 months). Moreover, most relapsed smokers were interested in receiving pharmacologic treatment (65% NRT and 48% bupropion SR) and many were willing to participate in behavioral treatment (41% individual counseling and 28% group counseling). Among relapsed smokers, there was great interest in continuing to try to quit smoking and the majority expressed desire for pharmacologic treatment. There was a preference for individual behavioral counseling.

VA HSR&D

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POS1-063 RECURRENT EVENTS ANALYSIS OF EFFECTS OF NRT ON LAPSE AND RECOVERY FROM LAPSE.

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Most smoking cessation clinical trials utilizing nicotine replacement therapies assess abstinence using summary measures that ignore the sequence of lapses and recoveries from lapse that characterize most quit attempts. To address this limitation, we modeled these recurrent lapse and recovery events (2730 transitions) using Cox regression, in the context of a randomized clinical trial comparing transdermal nicotine (TN) with nicotine nasal spray (NS). Participants were 427 smokers who received 8 weeks of NRT, and were assessed at 6 months. Results showed that different factors affected lapse and recovery events. Specifically, during the treatment phase, NS was more effective than TN in slowing the rate of lapse for those with high depression symptoms (CES-D≥16), while NS reduced the rate of recovery for all participants. During follow-up, NRT type interacted with preference for large cigarette size (supersize=100mm+) in predicting the lapse hazard, such that NS was more effective in slowing the rate of lapse for supersize smokers. NRT type also interacted with high body mass index (BMI≥30) in predicting recovery, such that NS had recovered much higher BMI participants compared to low BMI participants. Our results suggest that NS may be a more effective NRT delivery system than TN for those with high baseline depression symptoms, those who smoke supersize cigarettes, and those with high BMI.

This work was supported by a Transdisciplinary Tobacco Use Research Center grant P50 CA0487418, (NCI/NIADD) Caryn Lerman Ph.D. PI.

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POS1-064 A DOSE RANGING STUDY OF NALTREXONE AUGMENTATION OF TRANSDERMAL NICOTINE PATCH: SMOKING, WEIGHT AND ALCOHOL OUTCOMES.

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Although the endogenous opioid system has been implicated in smoking, studies of opiate antagonists for smoking cessation have been inconsistent. Using a method for using naltrexone in combination with transdermal nicotine replacement (TNR) to minimize naltrexone precipitated withdrawal and a larger sample size than previous studies, three doses of naltrexone (25, 50,100mg daily) were compared to placebo over six week double-blind study of 400 smokers. Smoking outcomes included continuous abstinence (not even a puff from the quit date); prolonged abstinence (last four weeks); smoking seven consecutive days, and 6-week point prevalence. Prolonged abstinence was increased by the 100 mg dose compared to placebo. Naltrexone (25 and 50 mg) resulted in significantly less weight gain; the reduction did not reach statistical significance for 100mg. Among subjects who drank heavily at baseline, the percentage drinking heavily during treatment was significantly lower in the 25 and 50mg groups, and to a lesser degree in the 100mg group. These findings suggest that higher doses of naltrexone may be needed for smoking cessation; while lower doses may reduce weight gain and alcohol use. Beneficial effects on weight gain and alcohol use in the absence of significant adverse events compared to TNR alone may motivate individuals to seek treatment who might otherwise be reluctant to quit smoking.

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Current cigarette smoking is highly prevalent among substance abusers, with some evidence it may be a marker of substance dependence. Both smoking and substance abuse are widespread among prisoners, however this relationship has not been investigated. The present study was part of a larger investigation of smoking behavior with 132 incarcerated females. The SASSI was administered to identify participants who have a high probability of substance dependence disorder, while other questionnaires assessed smoking behavior. The sample comprised of adult (M=35.20 yrs.), Caucasian (48.9 %), never been married (43.5 %), incarcerated women with at least a high school or GED education (80.8%). 66.4% of women identified themselves as current smokers, 14.5% as ex-smokers, and 19.1% and non-smokers. Overall, 71.8% of the women were classified as substance dependent during their lifetime. Smokers (82.8%) and Ex-Smokers (78.9%) were more likely to be classified as being substance dependent compared to Non-Smokers (28%). \( \bar{E}_2 (2. N = 131 = 29.3, p < .001 \). One-way ANOVAs were used to analyze participant’s smoking status and individual subscales on the SASSI. Smokers were significantly different on the following dimensions compared to non-smokers: SYM \( (F[2, 130] = 13, p < .001) \), OAT \( (F[2, 130] = 6.6, p = .002) \), SAT \( (F[2, 130] = 15.3, p < .001) \), DEF \( (F[2, 130] = 9.9, p < .001) \), FAM \( (F[2, 130] = 13.6, p < .001) \), COR \( (F[2, 130] = 11.8, p < .001) \), FVA \( (F[2, 130] = 7.8, p < .001) \), and FVOD \( (F[2, 130] = 12.5, p < .001) \). These findings indicate that a history of smoking may serve as a marker for substance dependence, even in a population with a high prevalence of substance use disorders.

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Little attention has been paid to participant attrition in the pre-randomization phase of clinical trials. However, evidence from a variety of disciplines suggests that a substantial proportion of potentially eligible subjects never attend an initial clinic visit or dropout prior to randomization. In the current study, of the 548 callers who qualified for an initial clinic visit, less than half (47%) attended this visit. As a result, we developed a brief phone screen intervention designed to improve initial intake attendance rates prior to randomization into a larger study of treatments for dual-dependent tobacco and alcohol users. After the standard clinic phone screen is completed and an initial clinic visit appointment is set, a randomly selected subgroup of the eligible callers participate in an Attendance Focus condition in which the telephone screener provides additional explanation and practical details about the study, along with encouragement about attending and recommendations for planning around potential obstacles that could prevent attendance (e.g., transportation, work, childcare conflicts). All callers are scheduled to receive a subsequent reminder call prior to the initial clinic appointment. To date, the 64 participants have been female (N = 13, 20%) and male smokers (N = 51, 80%). The sample was comprised middle-aged heavy smokers and drinkers (Means: Age = 41.8, Cigarettes/Day = 27.7, Drinks/Day = 9.1). Attendance rates have been comparable for the control (50.0%) and intervention (46.7%) groups. Reasons for lack of intervention effectiveness are considered and suggestions for future interventions for this challenging clinical population are discussed.

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PO51-069 RANDOMIZED, CONTROLLED INTERVENTION TO INCREASE INITIAL CLINIC ATTENDANCE IN A TRIAL FOR DUAL-DEPENDENT TOBACCO AND ALCOHOL USERS

Patricia Hokanson, Marc Mooney, Janice Crockett, and Joy Schmitz

PO51-071 DIFFERENCES BETWEEN SMOKERS WITH AND WITHOUT A HISTORY OF EXCESSIVE ALCOHOL USE

Cynthia S. Pomerleau,* Ovide F. Pomerleau, Sandy M. Snedecor, and Maher Karam-Hage

To identify traits and smoking patterns that characterize smokers with a history of heavy drinking, we studied 332 smokers (age 36.4 ±12.3 years; 67% female; 77% White; cigarettes/day 17.9 ±8.9; FTND 4.5 ±2.2) with and without such a history (CAGE=0, n=184; CAGE=2-4, n=148). No significant group differences emerged for age, gender, race, cigarettes/day, or FTND. CAGE+ smokers consumed significantly more alcoholic beverages/week (7.8 ±1.1) than CAGE- smokers (3.5 ±.7; t= 3.97, p<0.001) and had a significantly higher number of parents who drank excessively (0.6 ±0.6 vs. 0.4 ±0.6; t=2.27, p<0.05). They were significantly or marginally more likely to have tried marijuana, amphetamines, cocaine, opiates, PCP, tranquilizers, inhalants, and hallucinogens. They scored significantly higher on measures of depression, anxiety, novelty-seeking, and reward dependence, and marginally higher on harm avoidance. CAGE+ smokers rated alcohol accommodation significantly higher as a reason for starting to smoke (7.2 ±3.3 vs. 5.4 ±3.5; t=5.02, p<0.001) but did not differ from CAGE- smokers on nine other reasons. They were significantly younger when they smoked their first cigarette (13.6 ±4.6 vs. 15.1 ±3.9; t=2.97, p<0.01) and more likely to have smoked their second cigarette within a week of the first (53% vs. 38%; ChiSq=5.13, p<0.05). They reported significantly more dizziness in response to their first cigarette (2.9 ±1.0 vs. 2.6 ±1.; t=2.01, p<0.05). These results suggest the existence of a phenotype for smoking combined with excessive alcohol use that is characterized by greater psychopathology and experimentation with drugs; and associated with avidity of uptake and susceptibility to nicotine-induced dizziness. They also raise the possibility that combined nicotine and alcohol use is an important component of the putative smoking phenotype.

NIDA DA06529

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Patients with alcohol use disorders are often dependent on both alcohol and tobacco, and use of both substances may be more deleterious to health than use of either alone. The PH5/HRQ Guideline (2000) mandates that all smokers be encouraged to quit as part of best clinical practices. Discrepancy findings have been reported, however, regarding whether smoking cessation results in worse alcohol outcomes. Investigations of treatment samples in which smoking cessation programs are implemented within alcohol treatment typically show that patients can stop smoking without jeopardizing their sobriety. In contrast, studies of treatment samples whose smoking is not a targeted intervention and naturalistic studies of community samples report inconclusive results. The purpose of this study was to examine the course of drinking patterns before and after smoking cessation among patients treated for alcohol use disorders. Data were derived from Project MATCH, a longitudinal prospective study of treatment samples in which smoking cessation programs are implemented within alcohol treatment typically show that patients can stop smoking with.

PO51-070 WHAT HAPPENS TO ALCOHOL CONSUMPTION WHEN ALCOHOLICS QUIT SMOKING?

Maria E. Pagano, PhD Karen B. Friend, PhD*

Patients with alcohol use disorders are often dependent on both alcohol and tobacco, and use of both substances may be more deleterious to health than use of either alone. The PH5/HRQ Guideline (2000) mandates that all smokers be encouraged to quit as part of best clinical practices. Discrepancy findings have been reported, however, regarding whether smoking cessation results in worse alcohol outcomes. Investigations of treatment samples in which smoking cessation programs are implemented within alcohol treatment typically show that patients can stop smoking without jeopardizing their sobriety. In contrast, studies of treatment samples whose smoking is not a targeted intervention and naturalistic studies of community samples report inconclusive results. The purpose of this study was to examine the course of drinking patterns before and after smoking cessation among patients treated for alcohol use disorders. Data were derived from Project MATCH, a longitudinal prospective study of the efficacies of three alcohol behavioral treatments that included 1,726 participants. Of the 1,326 participants who smoked at any point during the study, 144 (11%) quit smoking. Quitters showed smoked fewer cigarettes per day at intake (Mean = 9.8, Standard Deviation = 13.2) than smokers who continued smoking (Mean = 23.8, Standard Deviation = 14.9) (p-value < .0001), but did not differ in alcohol consumption at intake. Latent growth analyses showed a significant reduction in alcohol consumption at the time of smoking cessation, which were sustained for six months following smoking cessation. Clinical implications of these findings suggest that patients with alcohol use disorders who enter treatment as smokers should be encouraged to quit smoking. Research is warranted to determine if these results are also applicable for heavy smokers.

This research was funded through Brown University, Department of Psychiatry and Human Behavior

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PO51-072 PRELIMINARY FINDINGS FROM A PILOT TREATMENT STUDY OF SMOKERS IN EARLY ALCOHOL RECOVERY

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In this double-blind study of smokers in early alcohol recovery, 40 participants are being randomly assigned to receive either bupropion (BP; 300-mg/day) or placebo for 12 weeks. Participants also receive two counseling sessions prior to quitting and twice per week counseling during the first 4 week of the postquit period and once per week for an additional 2 weeks. To be eligible for the study, participants must smoke >10 cigs/day, meet DSM-IV criteria for alcohol dependence (past 6 months) and have between 2 and 6 months of abstinence from all nonprescribed drugs. Twenty Ss have enrolled to date. Mean age of Ss is 47 (SD=6.9); 80% are male and 80% are non-hispanic white. 95% have a recent history of severe alcohol dependence; mean length of abstinence prior to enrollment is 2.6 months. Ss smoke 20.4 cigs/day (SD=13.8); FTND=6.3 (1.8). The double-blind has not yet been broken on any Ss. Five Ss have achieved smoking abstinence at 1-week postquit and three Ss have achieved smoking abstinence at 6-weeks postquit (end-of-counseling). Findings will be presented for 1-, 6- and 12-week (end-of treatment) follow up by treatment condition. As BP may promote cessation via altering the reward value of smoking prior to quitting, we will also present data on the effect of treatment condition on smoking satisfaction during the 10-day medication phase prior to a subject's quit day.

This study is being supported by the VAMC VISN 1 Mental Illness & Research Educational Center

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POS1-073 CONTINGENCY MANAGEMENT AND BEHAVIORAL SUPPORT AS A MEANS OF SMOKING CESSATION AMONG MODERATE ALCOHOL DRINKERS.

Thomas Liss*, Amanda McFetridge, Yale University School of Medicine, Judith L. Cooney, PhD., University of Connecticut School of Medicine, Boris Meandzija, MD, & Suchitra Krishnan-Sarin, PhD., Yale University School of Medicine

A literature review indicates alcohol dependent (past or present) cigarette smokers have been found to have lower rates of successful smoking cessation. In this study, we compared tobacco abstinence rates in smokers who were non-drinking or moderate alcohol drinkers. 57 smokers enrolled in a smoking cessation study were divided based on alcohol consumption into either low (< 10 drinks/month, n=23) or high (> 20 drinks/month, n=14) groups. Abstinence was determined using quantitative estimations of urine cotinine and breath carbon monoxide (CO) levels, and reinforced using contingency management (CM) procedures modified from Roll et al (1996). During the first eight days of the program, subjects received frequent brief behavioral counseling in combination with progressive reinforcement for tobacco abstinence. During the last three weeks, CM was discontinued, but counseling sessions were continued twice weekly. At the end of the first week, tobacco abstinence rates were similar (93%) in these two groups. However, subjects in the high alcohol (H) group were found to have higher abstinence rates when compared to the low alcohol (L) group at weeks two (H=64%, L=49%), three (H=57%, L=37%), four (H=50%, L=37%), and a two-month follow-up (H=29%, L=19%). Our pilot findings suggest that CM techniques in combination with frequent behavioral support may hold promise as a smoking cessation intervention for smokers who are moderate alcohol drinkers. Detailed information on changes in drinking patterns will also be presented.

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POS1-075 USING SPECIALIZED SURVIVAL GRAPHS IN LONGITUDINAL SUBSTANCE ABUSE TREATMENT STUDIES: RELATING ADVERSE EVENTS, EFFICACY, AND DROPOUT.

Joel A. Dubin*, Ph.D., Stephanie O’Malley, Ph.D.

The interplay between treatment efficacy, side effects, and participant dropout is an important issue in many clinical trials, including longitudinal substance abuse treatment studies. Because of the complexity of such data, particularly when covariates are also considered, presentation in tables can be cumbersome. More importantly, statistical modeling is not necessarily straightforward and graphical techniques are useful and usually necessary to explore important patterns and relationships.

Two graphical methods, the event chart (Lee, Hess, Dubin; American Statistician, 2000) and the event history graph (Dubin, Muller, Wang; Statistics in Medicine, 2001), will be presented, with application to a dose-ranging smoking cessation trial of naltrexone. We will use the graphs to “tell a story” regarding the complex data from this trial. Also, we hope to convey the utility of these graphical methods for other longitudinal clinical trials and observational studies. Support provided by NIH grants P50DA13334 and KO2 AA00171.

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POS1-074 CLIENT, SERVICE, AND ENVIRONMENTAL CHARACTERISTICS SUPPORTIVE OF TOBACCO CESSATION AMONG SMOKERS WITH CONCURRENT ADDICTIONS TO ALCOHOL AND/OR ILLICIT DRUGS


PROBLEM: Cigarette smoking contributes to more preventable illness and premature death than does alcohol and other addictive drugs combined. Moreover, smoking rates among alcoholics and users of illicit drugs are estimated at 85% to 95%. OBJECTIVE: To identify client, service, and environmental characteristics that facilitate reduction and cessation of tobacco use among smokers with concurrent addictions to alcohol and/or illicit drugs.

METHOD: A prospective clinical study of smokers (n=750) admitted over an 8 month period to a 19-day residential alcohol and drug treatment program, and a subgroup (n=220) who voluntarily participated in a tobacco cessation program during treatment. Clients completed a tobacco use history, Fagerstrom Test of Nicotine Dependence (FTND), Wisconsin Inventory of Smoking Dependence Motives (WISDM-68), Reasons to Quit questionnaire, and an outcome survey at 3 months post-discharge. Service and environmental characteristics were evaluated to identify barriers and supports to tobacco cessation. RESULTS: Over 80% of smokers participating in the tobacco cessation program were abstinent from tobacco use at discharge. Client characteristics linked to successful cessation included higher self-rated importance of quitting smoking at admission, motivation to quit smoking as a strategy to support abstinence from other addictive substances, and physical health concerns attributed to smoking. Service characteristics that facilitated tobacco cessation outcomes included free NRT tailored to individual needs, daily educational and support groups to address issues such as cravings and socio-behavioral changes, and access to supportive addiction counselors and nursing staff. Environmental influencers included strong social support from other clients and a smoke-free treatment environment. CONCLUSION: Cessation from smoking can be attained by adults in treatment for substance abuse through voluntarily participating in a structured smoking cessation program that builds on individual client motivations to quit smoking, provides tailored NRT therapy, and emphasizes socio-behavioral lifestyle changes in a supportive social and physical environment.

This study was funded by the Alberta Alcohol and Drug Abuse Commission, an agency of the Government of Alberta.

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**POS1-077** METHADONE PATIENT SATISFACTION WITH COMBINATION TREATMENT FOR SMOKING

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While smoking among all Americans has decreased to 23%, more than 78% of patients in drug treatment continue to smoke. This pilot study was conducted among 28 methadone patients over a 6-month period. Patients were recruited from 5 Kansas City facilities, and were provided bupropion HCL (300mg per day) for 7 weeks, nicotine gum (4mg mint, 8-24 pieces per day) for 12 weeks, and individual motivational interviewing (4 in person, 2 by phone.) We describe patients’ appraisal of the intervention, counselors’ adherence to the protocol, and patients’ recommendations for improvement. Measures included likert and open-ended questions, and responses are summarized using quantitative and qualitative analyses. Patients indicated high satisfaction with procedures and counselors. Although not a goal of treatment, many patients reported enhanced confidence. Contrary to protocol, patients perceived counselors as advice-giving. Patients recommended that future interventions include more frequent counseling, longer access to pharmacotherapy, and alternative treatments such as 12-step support and herbal remedies. Future studies should examine patient satisfaction using more frequent counseling sessions and extended pharmacotherapy.

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**POS1-078** GENDER DIFFERENCES IN SMOKING ATTRIBUTABLE DISEASES

Patricia B. Santora, PhD* and Heidi E. Hutton, PhD

Numerous studies have reported on the adverse health consequences of tobacco use, yet questions still remain about gender differences in smoking attributable diseases. Building the science base on gender-specific health outcomes could reveal differences in the risk of diseases, but the data on gender differences have been inconsistent and limited. Demographic and clinical information on all tobacco-dependent inpatients discharged from the Johns Hopkins Hospital between 1995-2000 (N=25,576) was extracted from the hospital’s computerized database. The recorded ICD-9-CM diagnostic code (305.1) identified tobacco-dependent discharges. Female discharges (N=11,613; 45%) were compared to male discharges (N=13,963; 55%) on comorbidity, mortality, length-of-stay, hospital costs, and primary payor group. Data analysis is ongoing, but preliminary results indicate that female hospital discharges have: (1) nearly twice the rate of chronic obstructive pulmonary disease, equivalent rates of diabetes, and higher rates of opiate use; (2) higher rates of repeated hospital admissions; (3) slower overall hospital costs and length of stay; and (4) hospital costs paid by public agencies when compared to male hospital discharges. Delineating gender differences could have important implications for improving intervention strategies and addiction treatment, and expanding access to quality care for addiction.

The Blades Center for Clinical Practice and Research in Alcohol/Drug Dependence, and The Robert Wood Johnson Foundation’s Innovators Program

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**POS1-079** SEVENTY YEARS OF EPIDEMIC CANCER DEATHS IN UNITED STATES MEN: RELATIONSHIPS TO TOBACCO AND TREATMENT

Bruce N. Leistikow

Background. I assessed relationships between tobacco control, cancer treatment, and US male cancer death rates since 1930. Age-adjusted cancer death rates (rates) are a function of virulent cancer incidence and survival. If exposure varies widely, exposure/incidence ratios are stable, and the effects of treatment and International Classification of Disease (ICD) changes are negligible, then exposure/death rate associations should be strong. Since 1930, US lung cancer death rates rose due to smoking, and stomach cancer rates fell, likely due to sanitation. The course and causes of rate trends for the aggregated remaining "non-lung cancers" are unknown, despite their comprising 60+% of cancer deaths. So I calculated US male 1930-2000 ~non-lung cancer death rates and their associations with smoking and treatment exposure. Methods. I used lung cancer death rates as an integrative index of acute + cumulative tobacco smoke exposure effects (exposure). I used national health care costs times cancer/total death rates as a measure of treatment exposure (treatment). I calculated ~non-lung cancer rates and smoking-attributable fractions (SAF), using the formulas: ~non-lung rate = all-sites – lung – stomach cancer death rates and 'SAF = (exposeds' rate – unexposeds' rate)/ exposeds' rate.' I assessed exposure/disease associations using linear regression without and with log transformation of exposure rates. Results. US male lung and ~non-lung cancer death rates rose in lock-step from 1930-1990 then fell 8-15% (1930-2000 R^2=84-98, p<0.001). ICD and prostate-specific antigen testing-related death classification changes had modest effects. The estimated year 2000 male all-sites cancer SAF is 43%. Discussion. Smoking can explain 84-98% of US male ~non-lung cancer rates' variance since 1930, and 40+% of the year 2000 rate. Except for 1990s exposure/disease ratio changes that disappeared with ICD 10 use, it appears that treatments haven’t affected death rates. Increased investment in tobacco control is merited.

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**POS1-080** CONSPIRACY OF SILENCE: THE IMPACT OF ADULT KNOWLEDGE OF CANCER RISKS FROM SMOKING

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The American Smoking and Health Survey (ASHES), the first nationally representative survey of adults specific to smoking behavior since 1896, was conducted by The American Legacy Foundation in mid-2002. ASHES surveyed adult smoking and smoking cessation behavior, and attitudes, knowledge and beliefs about smoking risks. A total of 3405 adults participated in the RDD telephone survey: ages 18-94 (mean = 43 years); 64.9% F and 35.1% M. Smoking prevalence was comparable to other national estimates. Among the attitudinal and belief items, overall, respondents believed (mistakenly) that the leading cause of cancer death among women is breast cancer, not lung cancer. That finding holds across gender, race/ethnicity and age, and smoking status. While many attitude and belief items did not demonstrate gender or race/ethnicity differences, there were several significant findings. Women were more likely than men to report that smoking relieves tension. As well as to believe that people view them as foolish for ignoring the warnings about smoking. White smokers were most likely, and Hispanic smokers least likely to report that smoking relieves tension. While smokers were least likely to report that the association between smoking and cancer is not proven, and to believe lung cancer has more to do with genetics. Hispanics were most likely to believe that secondhand smoke is a cause of lung cancer in non-smokers, as well as of SIDS. On most issues, the American public remains shockingly unaware of the true cancer risks of smoking — education, media advocacy, counter-advertising and advocacy must correct these misperceptions!

Funding: American Legacy Foundation

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POS1-081  SMOKELESS TOBACCO AND ORAL CANCER; OVERSTATEMENT OF THE ASSOCIATION AND PUBLICATION BIAS IN SITU

Carl V. Phillips, Ph.D., University of Texas School of Public Health

There is near universal belief that smokeless tobacco (ST) is a clear and substantial risk factor for oral cancer (OC). However, this is based on selective citation of a small number of epidemiologic results. Furthermore, if these are carefully examined, the results are weaker than claimed. I previously labeled as “publication bias in situ” the tendency in the epidemiologic literature to extract and report only those results from a study that are large or otherwise interesting. The effects of this are similar to those of publication bias as traditionally defined. In particular, the corpus of published claims will overstate the relationship between exposure and disease. The literature on OC risk from ST use provides a striking example. Of the more than 20 reports in the epidemiologic literature in the last 25 years, most show no substantial association and/or non-significant results (low statistical power). Of those that claimed to find a relationship, several reported results from only a single subgroup of the population. When the results for other subgroups or the entire population are calculated, they show a lack of association. The single article that is largely responsible for the claims of association [Winn et al., New England Journal of Medicine, 1981] was reported in ways that overstate the study results by highlighting results for one racial group, restricting some analysis to other subgroups, and choosing the measure of exposure dosage. Overall, the already equivocal epidemiologic evidence about an association becomes even weaker when we consider complete study results rather than what authors chose to emphasize.

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POS1-083  DOES CONTINUED SMOKING AFTER A DIAGNOSIS OF BLADDER OR HEAD AND NECK CANCER REDUCE SURVIVAL?

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There is evidence to suggest that if patients with bladder or head and neck cancer stopped smoking their survival rates would improve, by reducing the risk of cancer death or death from other causes. Merseyside and Cheshire Cancer Registry (MCCR) is one of the few in the UK to record smoking information. The aim of this study was to examine the effect of smoking status at the time of diagnosis of bladder or head and neck cancer (a proxy for continuing smoking) on survival. All cases of bladder cancer (ICD10 C67) and head and neck cancer (ICD10 C00-C14, C32) diagnosed between 1988 and 1999 in residents of Merseyside and Cheshire, where case note access was complete, and smoking was recorded as a related factor, were included in a database. Data collected included: smoking status at time of diagnosis, form of tobacco consumption, amount smoked per day, year of starting smoking, number of years smoked, year stopped smoking and number of years since stopping. We conducted a survival analysis comparing the risk of death in current versus ex-smokers. In current smokers with head and neck cancer the relative risk of death compared with ex-smokers, adjusted for age at diagnosis and gender, was 1.35 (95% CI 1.21 to 1.51). Patients who smoked at the time of their diagnosis with bladder cancer had a 14% higher risk of death than ex-smokers with bladder cancer (RR=1.14, 95% CI 1.04 to 1.25).

Cancer Research UK

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POS1-084  ELIGIBILITY SCREENING IN A SMOKING CESSATION TRIAL FOR LUNG CANCER PATIENTS

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Despite the numerous adverse effects of continued smoking among individuals diagnosed with cancer, relatively few efforts have been made to offer treatment to this patient group. This study describes the participant recruitment experience for a clinical trial designed to test the efficacy of adding an anti-depressant (bupropion, Zyanban) to a standard smoking cessation intervention (NRT+counseling) in lung cancer patients. Over a ten-month period, 2530 patients receiving care at the Thoracic & Cardiovascular Surgery Clinic at UT M. D. Anderson Cancer Center were screened. Eligibility criteria included: completely resected stage I or II non-small cell lung cancer (NSCLC); free of recurrent or progressive disease; current smoker; without psychiatric morbidity; post-surgery; and willing to set a quit date within 30 days. A total of 565 patients were identified as having early stage I & II NSCLC. Of the 61 potentially eligible patients (11%), 26 were approached but declined to participate; 32 were not available for interview; and only 3 have been enrolled into the study to date. The remaining 504 patients (89%) were considered ineligible. The most frequent reason for exclusion among these early stage patients was quitting cigarette smoking or never smoking 73% (n=370). Among this category, 49% quit before diagnosis, 34% quit before surgery, and 17% were lifetime non-smokers. Other exclusionary criteria among these patients included recurrent or progressive disease 18% (n=88), psychiatric morbidity 6% (n=31), and receiving smoking cessation intervention via other means 3% (n=13). In addition, approximately 236 patients were pre-surgery and could potentially become eligible post-resection. Findings suggest that prevalence of smoking among individuals with early stage NSCLC is relatively low post-surgery.

Funding: Southwest Oncology Group

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POS1-085  THE ASSOCIATION OF ALCOHOL CONSUMPTION WITH CORONARY HEART DISEASE MORTALITY AND CANCER INCIDENCE VARIES BY SMOKING HISTORY: THE IOWA WOMEN’S HEALTH STUDY

P. Jon O. Ebbert, M.D., M.Sc., Carol A. Janney, M.S., Thomas A. Sellers, Ph.D., James R. Cerhan, M.D., Ph.D., Mayo Clinic Cancer Center, and Aaron R. Folsom, M.D., M.P.H., University of Minnesota

To evaluate the interaction between alcohol consumption and smoking history on mortality (total, cancer, and CHD) and cancer incidence, we analyzed a prospective cohort study of 41,836 Iowa women aged 55 to 69 years established through questionnaire in 1986. Cancer incidence and mortality through 1998 were determined. We observed that among never smokers, alcohol consumption (> 14 g/day versus none) was inversely associated with age-adjusted coronary heart disease (CHD) mortality [RR = 0.40; 95% confidence interval (CI): 0.19-0.85] and total mortality [RR = 0.71; 95% CI: 0.55-0.92], and there was no association with cancer incidence [RR = 0.91; 95% CI: 0.74-1.11]. Among former smokers, alcohol consumption was also inversely associated with CHD mortality (RR = 0.44; 95% CI: 0.22-0.85) and total mortality (RR = 0.78; 95% CI: 0.62-0.97), but was positively associated with cancer incidence (RR = 1.23; 95% CI: 1.01-1.49). Among current smokers, alcohol consumption was not associated with CHD mortality (RR = 1.04; 95% CI: 0.73-1.50) or total mortality (RR = 1.06; 95% CI: 0.91-1.25) but was positively associated with cancer incidence (RR = 1.25; 95% CI: 1.05-1.48). The findings suggest that health behavior counseling allowing for the consumption of alcohol regardless of smoking history potentially places former and current smokers at increased risk for cancer without decreasing the risks for CHD mortality among current smokers.

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POS1-086  CARDIOVASCULAR RISK BEHAVIOR AMONG SEDENTARY FEMALE SMOKERS AND SMOKING CESSATION OUTCOMES

Tellervo Korhonen, Ph.D.*, Donna L. Medaglia, M.S., Arthur J. Garvey, Ph.D., and Taru H.Mustonen, Ph.D. Harvard School of Dental Medicine

We studied whether cardiovascular (CVD) risk behaviors of sedentary female smokers are associated with smoking cessation. This study, as part of a randomized controlled trial testing effectiveness of exercise and nicotine gum in smoking cessation, included 148 participants. We measured their dietary habits and alcohol consumption, high-fat diet and non-moderate drinking being regarded as additional CVD risk behaviors. We categorized the participants into groups with “no risk behaviors”, “1 risk behavior”, and “2 risk behaviors”. More than half had 1, whereas about 10% had 2 additional risk behaviors. Nicotine dependence, number of earlier quit attempts, self-efficacy, depressive symptoms, and education were examined as smoking-related baseline variables. Abstinence from tobacco was recorded through 12 months. Those with high-fat diet had higher depression scores than those eating more vegetables (p=.03). Those with non-modern drinking had higher nicotine dependence than those with moderate alcohol use (p=.02). Subjects with 1-2 risk behaviors were less educated (p=.02) and more nicotine dependent (p=.02) than those with no risk behaviors. The 12-month abstinence rates were 15.7% for quitters without risk behaviors, whereas 8.3% for those with 1-2 risk behaviors. Based on survival analysis, this result was only marginally significant (p=.13). However, being engaged in risk behaviors had an interaction with baseline depression. When adjusting for other smoking-related variables, the depressed quitters with risk behaviors were twice as likely to relapse as those without risk behaviors (OR=2.34; C95% 1.12-4.87). We conclude that additional CVD risk behaviors are associated with smoking-related baseline variables and together with depressive symptoms predict rapid relapse in smoking cessation.

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POS1-087  “CHOLESTEROL LEVELS AND SMOKING RATES AS RISK FACTORS FOR CARDIOVASCULAR DISEASE”

M. Lind-Ayres*, SS Allen MD, Ph.D., D. Hatsukami, Ph.D.

Hypercholesterolemia and smoking are documented risk factors for cardiovascular disease (CVD). Smoking abstinence has been shown to decrease CVD risk by improving cholesterol values. This study examined whether smokers’ lipid profiles differ according to number of cigarettes smoked per day. Significant differences would suggest a clinical benefit to smoking reduction. Subjects (n=296, ages 19-70 years) were divided into groups based on self-reported number of cigarettes smoked per day: <10 (group 1, n=43), 10-20 (group 2, n=104), and >20 (group 3, n=144). A fasting lipid profile was measured, including total cholesterol, HDL, LDL, apolipoprotein AI, apolipoprotein B100, and triglycerides. Blood pressure and heart rate were also assessed. Smoking rate groups differed by age (group 1: 46.0 years ± 11 (SD), group 2: 41.5 ± 12, group 3: 45.4 ± 11; F=4.3, p=.02). Mean Fagerström Test for Nicotine Dependence (FTND) scores were 1.91 ± 1.9, 4.77 ± 1.7, and 6.41 ± 1.6 for groups 1, 2, and 3, respectively (F=120, p < .01). Controlling for age, ANCOVA revealed no significant differences (p>.05) between the three groups for blood pressure, heart rate, or cholesterol variables. However, when group 1 was compared with group 3, the apolipoprotein B100 mean for group 1 (94.14 mg/dl ± 26.7) was significantly lower than the mean for group 3 (103.35 mg/dl ± 27.8; F=4.1, p=.04). In summary, smoking rate based on our categorizations was not related to most cholesterol values. These preliminary findings suggest that, with the possible exception of apolipoprotein B100, smoking reduction alone will not significantly reduce cardiovascular disease risk in terms of lipid levels. Alternatively, one’s smoking rate must be extremely low for beneficial effects to be seen.

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POS1-088  EFFECT OF SMOKING REDUCTION ON CARDIOVASCULAR BIOMARKERS AND SUBJECTIVE MEASURES

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To assess the effect of continued smoking and smoking reduction on cardiovascular biomarkers and subjective measures, subjects were randomized to either a 6-week waitlist or to immediately start smoking reduction. Those starting smoking reduction (n=102) reduced by 25% for two weeks, 50% for two weeks and 75% during the final two weeks. After 6 weeks subjects were asked to maintain a 50% reduction or quit. The waitlist group (n=49) smoked ad libitum for 6 weeks, then reduced smoking as previously described. Nicotine gum and, if necessary, patch were used to achieve the reduction goals. Cardiovascular biomarkers (e.g. white blood count, cholesterol concentrations, blood pressure, heart rate) and subjective measures (e.g. FTND, interest and self-efficacy to quit, perceived health status) were assessed. During ad libitum smoking, cardiovascular biomarkers and subjective measures remained relatively stable with correlation coefficients across the various time measurements ranging from 0.42 to 1.00 (statistically significant for all measures). Among successful reducers (65/151), significant decreases were found in many biomarkers and subjective measures (e.g. hematocrit, white blood count, triglycerides, total cholesterol, blood pressure, heart rate, FTND). Significant increases were observed for other measures (e.g. HDL, interest and self-efficacy to quit, perceived health status). At 6 weeks 1/151 subjects were abstinent, at 12 weeks 15/151. At 26 weeks 27% achieved a 40% smoking reduction and 7% quit. We found that certain biomarkers of cardiovascular disease risk and subjective measures are relatively stable over time when amount smoked is maintained at a constant rate but are altered in response to changes in smoking behavior.

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POS1-089  INTERVENTION TO SLOW PROGRESSION OF PERIPHERAL ARTERIAL DISEASE

S. Christman, M.E. Wewers, J.Buckworth, K. Ahijevych*

Lower extremity arterial occlusive disease represents a major cause of morbidity in the elderly. Intermittent claudication, walking induced leg pain relieved by rest, is a classic symptom in peripheral arterial disease (PAD) patients. Cigarette smoking is a major contributor to PAD and its progression. The purpose was to determine the effect of a 12-week exercise and smoking cessation intervention on functional status, exercise self-efficacy and decisional balance for exercise and smoking at 3 and 6 months post enrollment. Functional status was defined as pain free walking time (claudication pain time [CPT]) and maximal walking time (MWT) in minutes and seconds. There were 30 participants. 14 in the intervention group and 16 in the usual care group. The intervention group had significant improvements in CPT at 3 and 6 months, and in MWT at 3 months. There were no significant improvements in either measure for the usual care group. There were no changes in exercise decisional balance scores over time for either group. While exercise self-efficacy did not change for the intervention group, it decreased significantly in the usual care group. For the 15 biochemically confirmed smokers, there was no evidence that the intervention resulted in significant smoking cessation rates. Qualitatively, smoking cessation occurred with a significant health event. One implication is that a more cost-effective use of resources may be providing smoking cessation interventions to all claudicators undergoing vascular procedures, beginning in the hospital and follow-up continuing after discharge. As the incidence of PAD continues to increase, there will be increased need for interventions to help claudicators make lifestyle changes of quitting smoking and beginning regular exercise known to be beneficial.

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POS1-090 SPONTANEOUS REDUCTION IN THE NUMBER OF CIGARETTES SMOKED PER DAY AMONG PATIENTS WITH HEART DISEASE

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Background. The Reduction of Smoking in Cardiac Patients (ROSCAP) Study is a randomized controlled trial to test the effectiveness of a harm reduction strategy to decrease smoking, promote cessation and improve biochemical and clinical indicators of toxin exposure among patients with heart disease. Objective. We analyzed baseline characteristics of patients screened for participation to investigate predictors of spontaneous reduction in smoking prior to enrollment in the trial. Methods. We examined the relationship between age, birth cohort, smoking history, medical, psychiatric and substance abuse histories and the difference between past peak smoking and current smoking levels among 152 patients screened for ROSCAP. Results. 95% of patients screened had made at least one prior attempt to quit smoking, 91.4% had attempted to cut down on smoking, 77.4% had switched to low tar/low nicotine cigarettes and 84.1% believed smoking reduction would improve health some or a great deal. On average the past peak daily smoking rate was 42.9 cigarettes per day (SD=16.6), compared to 27.4 cigarettes per day (SD=10.5) at the time of enrollment. Univariate analyses showed that increased age, COPD and number of heart disease diagnoses were associated with spontaneous reduction. Psychiatric problems did not positively or negatively predict past reduction. In multivariate analyses only the number of heart disease diagnoses independently predicted spontaneous reduction (reduction of ~1 cigarette per diagnosis, P=0.026). Conclusions. Spontaneous reduction is common among medically ill smokers. Past history of heart disease is the strongest predictor of prior reduction. These results are consistent with the association between severity of heart disease and smoking cessation.

This study was supported by funding from the National Cancer Institute and National Institute Drug Abuse Grant DA13333-02.

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POS1-091 IMPACT OF TOBACCO DEPENDENCE ON AFRICAN-AMERICAN HOSPITAL DISCHARGES: MORBIDITY, MORTALITY, AND COSTS

Heidi E. Hutton PhD*, Patricia B. Santora, PhD, Johns Hopkins Medical School

Tobacco use causes higher rates of morbidity and mortality in the US than all other dependence producing substances. African-Americans have high rates of smoking but when compared to whites, have significantly higher morbidity and mortality rates from smoking attributable diseases, such as cancer and cardiovascular disease. Research on the complex interaction of comorbid disease, mortality, and hospital costs has been limited. The demographic and clinical information on all tobacco-dependent inpatients discharged between 1995-2000 (N=25,520) was extracted from the Johns Hopkins Hospital’s computerized database. The recorded ICD-9-CM diagnostic code (305.1) was used to identify tobacco-dependent discharges. African-American discharges (N=13,722;53.8%) were compared to white discharges (N=11,798;46.2%) on comorbidity, mortality, length of stay, hospital costs, and payor group. Preliminary results indicate that African-American hospital discharges have: 1) higher rates of COPD, diabetes, and substance abuse; 2) lower overall hospital costs and length of stay; 3) higher rates of repeat admissions; and 4) hospital costs paid by a public payor group when compared to white hospital discharges. All hospitalized patients should be screened and treated for tobacco-relevance to reduce tobacco-related morbidity and mortality. The importance of screening is particularly underscored in hospitalized African-Americans with high rates of morbidity.

The Blades Center for Clinical Practice and Research in Alcohol/Drug Dependence and The Robert Wood Johnson Foundation Innovators Program.

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POS1-092 SMOKING CESSATION REDUCES LOWER RESPIRATORY TRACT INFLAMMATION IN HEALTHY SMOKERS

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Inflammation of the lower respiratory tract is a characteristic feature of cigarette smoke-induced lung disease. It remains controversial, however, to what degree established inflammatory processes are reversible following cessation. The current study was designed to address this question in asymptomatic smokers. Thirty smokers (>20 cig/day) who wished to quit and were willing to consider two flexible fiberoptic bronchoscopies were recruited. Smoking cessation was undertaken with the most aggressive program desired by the subject (counseling + nicotine replacement therapy + bupropion). Subjects were assessed with bronchoscope, bronchoalveolar lavage and biopsy before and six months following cessation. Smoking cessation was confirmed by exhaled CO (<8 ppm). Eighty of the 120 subjects were smoke free for one month prior to the six-month visit, of whom, seven had remained abstinent for six months. Inflammation assessed by bronchitis index declined from (mean ± s.d.) 7.4 ± 3.7 to 3.0 ± 2.6, p = 0.03 and did not differ from historical non-smoker controls 2.5 ± 2.1 p = 0.6. Total alveolar macrophages recovered also declined from 0.5 to 0.3 to 0.2 ± 0.1 cells per ml recovered, p = 0.008 which did not differ significantly from normal non-smoker controls 0.2 ± 0.1, p = 0.7. Goblet cell metaplasia showed a reduction from 44.0 ± 10.2 to 30.6 ± 9.4, p = 0.02 but was still significantly greater than normal controls 8.1 ± 5.9% of total columnar cells, p = 0.002. This study, therefore, supports the concept that both inflammatory processes and histologic alterations present in asymptomatic smokers are reversible with cessation. Whether similar changes would be observed in patients with established lung disease remains to be assessed. Approaches using harm reduction strategies in asymptomatic smokers, however, can utilize normalization of lower respiratory tract abnormalities as an assessment goal.

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POS1-093 CIGARETTE SMOKING, INCIDENCE OF ROOT CANAL TREATMENT, AND SURVIVAL OF TEETH IN THE VA DENTAL LONGITUDINAL STUDY.


Smoking has harmful effects on oral mucosa, oral bone and tooth survival, but no reports have investigated the role of smoking in endodontic lesions that require root canal treatment (RCTx). Our aim was to determine if smoking is related to higher incidence of RCTx and has a greater detrimental effect on survival of RCTx teeth than on untreated teeth, controlling for recognized risk factors. Subjects were 1,014 dentate men in the VA Dental Longitudinal Study, a closed-panel cohort study of men. Subjects are not VA patients, but receive medical and dental care in the private sector. Incidence of RCTx and tooth loss were examined with multivariate proportional hazards models. Hazards ratios (HR) and 95% confidence intervals (CI) are reported. Fifty-six percent smoked no tobacco products during follow-up, 27% smoked cigarettes (mean 1.3 packs/day for 14.5 years), and 17% smoked cigars or pipes. During 33 years of follow-up, 380 men had 997 teeth with new RCTx. The HR of RCTx among cigarette smokers was 1.4 (CI=1.1-1.6) after adjustment for age, number of filled or decayed surfaces, and periodontal bone loss level. Cigars and pipes were not significantly associated with increased risk of RCTx. Root canal treatment was an independent risk factor for tooth loss, however the HR and CI were similar in nonsmokers (2.5, 1.9-3.3), cigarette smokers (1.7, 1.2-2.5), and cigar/pipe smokers (2.0, 1.4-2.9). These results suggest cigarette smoking increases the risk of endodontic lesions.

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POS1-094  SMOKING HISTORY IS RELATED TO CURRENT FUNCTIONING IN FRAIL OLDER ADULTS

Amie Haas*, Catherine Eng, & Sharon Hall

Individuals are living longer than at any time in history, yet there is little research examining the impact of smoking history on current functioning in older adults, particularly those who are frail. This study was conducted to identify characteristics associated with continued smoking in the older old and examine how smoking history relates to current psychiatric and occupational functioning. Records were gathered for 1,064 medically frail individuals (Mean age = 80, 69% women) entering OnLok Senior Health Care Services, an all-inclusive program that provides an alternative to traditional nursing home care. Participants were interviewed by clinicians on program entry and assessed for smoking history, depressive symptoms, affective disorders, cognitive functioning, alcohol use, and physical functioning (ADL and IADL). Cross-sectional analyses were conducted to examine functioning at enrollment relative to smoking history. Results indicated that current smokers entered the program at a significantly earlier age than former or never smokers (75 versus 78 and 81 years, respectively). Current smokers were more likely to be male, Caucasian or African-American, and consume alcohol regularly. They were more independent on ADL tasks related to their capacity to procure cigarettes or continue smoking, including shopping, using transportation, managing money, dressing themselves, and walking. Smoking history was related to depression, with symptoms lower for current and former smokers and diagnoses more prevalent for never smokers. Overall, results indicate that current smokers present for nursing-home type services at an earlier age and have higher levels of independence on ADLs instrumental to nicotine use. Findings suggest characteristics associated with continued smoking and possible foundations for age-specific cessation programs.

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POS1-095  A PRELIMINARY EXAMINATION OF SMOKING RATES OF NURSING STAFF IN LONG-TERM CARE SETTINGS


Within the general population evidence supports a relationship between educational attainment and prevalence of smoking; numerous studies have found that smoking rates are inversely proportional to levels of education. In addition, literature indicates that the incidence of smoking among nurses is 28%, a higher rate of smoking when compared to that of other professions. Even amongst nurses, different levels of education (e.g., LPN, RN) and specialties (e.g., psychiatric, critical care, etc.) have been linked to varying smoking rates. The smoking rates of nurses working in long-term skilled nursing facilities have yet to be examined. This study will describe the preliminary findings of data drawn from a national sample of nursing staffs (CNA, LPN, RN) smoking rates working in long-term care facilities. Nurses in all health care settings are encouraged to advise patients to discontinue or modify their tobacco use. However, research indicates that the majority of long-term care residents do not receive such advice. Identification of the prevalence of smoking among these health care providers is the first step to understanding nurses' attitudes towards resident smoking and giving cessation advice in this specific setting.

Research supported by funding from the National Cancer Institute Grant 1 R03 CA097742-01.

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POS1-096  DETERMINANTS OF HOSPITAL NURSES' INTEGRATION OF TOBACCO REDUCTION INTO PRACTICE: A PATH MODEL ANALYSIS

Schultz, ASH*

This mixed methods study investigated the nursing practice, hospital environment, and relevant community resources of hospital nurses working at two mid-sized hospitals in British Columbia, Canada. Data collection at site A was conducted on nine adult inpatient wards and targeted a population of 225 nurses. At site B data was collected on seven adult inpatient wards and targeted a population of 180 nurses. Data collection occurred through a self-administered nurse survey and ethnographic approaches. The response rates for the survey were: Site A 45% (n=101) and Site B 63% (n=113). The analysis was guided by a theoretical model that outlined the effect of intrapersonal and interpersonal variables on nurses' integration of tobacco reduction (TR) into practice. Variables in the model included: age, professional demographics, smoking status, TR attitudes, perception of barriers, personal network experiences, and work place environment scales. Understanding variables that influence nurses' integration of TR into practice supports policy and program development and implementation. Reduction of tobacco use is the single most effective means to prevent premature death and disease; therefore health care professionals (HCPs) play an important role in addressing TR. While nurses are only one HCP group, supporting the surveyed nurses is a key part of tobacco control because nurses can build upon this experience of abstinence to support future cessation attempts.

Bursary: University of British Columbia, School of Nursing; Katherine McMillan Director's Discretionary Fund ($2,000) Fellowship; 2 year Research Fellow from Canadian Institute of Health Research (Health Services and Policy Research Institute) and 1 year Fellowship support from Strategic Training Fellow in Tobacco Research

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POS1-097  LISTENING TO NURSES' STORIES CONCERNING TOBACCO: AN ETHNOGRAPHIC APPROACH TO EXPLORING NURSES' INTEGRATION OF TOBACCO REDUCTION INTO PRACTICE

Schultz, ASH*

Reduction of tobacco use is a primary health priority because it is the single most effective means to prevent premature death and disease. Health care professionals (HCPs) have an important role to play in addressing tobacco reduction (TR). One HCP group of particular interest is nurses. Not only are nurses a large group, they have the greatest amount of patient contact, work in diverse settings, and hold the public trust. Hospitalization has been deemed an opportune time to introduce TR because the health concern related to hospitalization is potentially associated with tobacco use, patients’ tobacco use patterns are usually interrupted during hospitalization, and the patients’ healing process would be enhanced if the person smoked less or stopped even for a few days. This mixed methods study investigated the nursing practice, hospital environment, and relevant community resources of hospital nurses working at two mid-sized hospitals in British Columbia, Canada. Site A comprised nine adult inpatient wards and a population of 225 nurses and Site B comprised seven adult inpatient wards and a population of 180 nurses. Data collection occurred through a self-administered nurse survey and ethnographic approaches. The response rates for the survey were: Site A 45% (n=101) and Site B 63% (n=113). Ethnographic methods resulted in over 100 hours of observations and document collection on the nursing wards and over a hundred conversations about nursing practice and tobacco. The presentation will focus on the analysis of the conversations and qualitative data collected from the surveys. Analysis of this data includes an exploration beyond content analysis to consideration of how identified themes are socially/politically situated; thereby, illuminating contextual pressures surrounding nurses that are influencing TR with patients who smoke. Results will provide valuable information for policy and program development related to integration of TR into nursing practice.

Bursary: University of British Columbia, School of Nursing; Katherine McMillan Director’s Discretionary Fund ($2,000) Fellowship; 2 year Research Fellow from Canadian Institute of Health Research (Health Services and Policy Research Institute) and 1 year Fellowship support from Strategic Training Fellow in Tobacco Research

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POS1-099

EFFECTS OF GENDER ON SMOKING CESSION AMONG PARENTS OF BABIES BEING TREATED IN A SPECIAL CARE NURSERY

Bruce Becker, MD, MPH*, Beth Bock, PhD, Andrew Taitano, BA, Sarah Skeels, BA, MPH, Courtney Wilson

Tobacco smoke affects the smoker and those who live with them, especially children. Babies treated in a Special Care Nursery (SCN) are at great risk from tobacco smoke due to a high prevalence of respiratory disease. Forty percent of parents quit during pregnancy; 80% relapse within 6 months. This study examined differences in smoking attitudes and behaviors between mothers and fathers of babies in an SCN. We offered a smoking cessation intervention to parents in the SCN of an urban teaching hospital. Participants were given a motivational interview with follow up telephone counseling and were offered Nicotine Replacement Therapy (NRT). 93 mothers and 103 fathers had a mean age of 30 (SD=8) and smoked 15 cigarettes/day (SD=d). Sixty-seven percent were white, 11% Black, and 14% Hispanic. Thirty-seven percent had not finished high school. Mothers were more likely than fathers to be single (45% vs. 25%), poor ($12,800/year vs. $21,280/year), have more depressive symptoms (CESD; 13.5 vs. 10.3) (p<.05). Mothers were less likely to: ask for NRT (37% vs. 63%), be quit at 6 months follow-up (16.7% vs. 24%, p<.05), or trying to quit (71% vs. 84%, p<.05). At follow-up mothers’ degree of temptation to smoke with their spouse showed a strong positive association with the number of cigarettes smoked (r=.53, p<.01), and stage of change (r=.46, p<.05). Mothers’ 6 month smoking status correlated with their embarrassment at smoking (r=.518,p<.01). Parents, and especially mothers of SCN babies need smoking cessation interventions tailored to their unique situation.

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POS1-100

DECREASE IN PREGNANCY-SMOKING RATES: FACT OR FICTION?

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Recent reports indicate that pregnancy-smoking rates decreased during the last decade. It is unclear whether this change reflects a decrease in practice, rather than a decrease in self-reporting of pregnancy-smoking. True decreases in pregnancy-smoking rates ought to be manifest at all levels of smoking, particularly at the light smoking level. We tested the hypothesis that light pregnancy-smoking rates did not change in Kansas City over 2 epochs, 1993-1997 and 1998-2002, by conducting a retrospective study of 67,385 pregnancies. The data source was computer files of vital statistics birth certificates containing information on demographic and smoking behaviors, specifically cigarettes per day (cpd). This group was 67% White, 54% <13 years education, and 73% age 20-34y. Over the two epochs, overall self-reported pregnancy-smoking rates decreased from 18.1%(20%;CI=17.7-18.5%) to 14.2%(13.8-14.5%). The smoking-level specific rates from 1993-1997 and 1998-2002 were: light(1-9cpd) 7.1%(6.2-7.5%) v 6.9%(6.4-7.8%), moderate(10-19cpd) 6.7%(5.8-7.5%) v 4.9%(4.1-5.6%), and heavy(>19cpd) 4.4%(3.7-5.1%) v 2.3%(1.8-2.9%), respectively. Among smokers, the smoking-level distribution increased for light [39%(38.9-40.3%)] v 49%(47.6-50.4%), was unchanged for moderate [36.8%(34.8-38.8%)] v 34.4%(32.1-36.7%), and decreased for heavy [23.1%(21.9-26.3%)] v 16.6%(14.1-19.1%). This distribution shift toward light smoking was particularly evident amongst those who were White, >34y, and with <13y education. Although the data can be interpreted to mean that there is a decrease in heavier forms of smoking, it is more suggestive of decreases in self-reporting of pregnancy-smoking. Pregnant women may be under-reporting the number of cigarettes smoked daily because of greater awareness of the impact of smoking on the health of their fetus. This study highlights the need for more effective anti-smoking, initiation-prevention and cessation-promotion, campaign.

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POS1-099

LONGITUDINAL ANALYSIS OF PRENATAL NICOTINE EXPOSURE ON OFFSPRING’S SUBSEQUENT SMOKING BEHAVIOUR


Causes underlying the development of smoking behaviours are of considerable public health importance. This study aimed to explore the influence of maternal smoking during pregnancy on the risk of smoking among offspring in adolescence and adulthood. Data were drawn from the National Child Development Study (NCDS), an ongoing multidisciplinary investigation of a British cohort born between March 3rd - 9th, 1958, with follow-up of survivors at ages 7, 11, 16, 23, and 33 years. The cohort provided complete follow-up for approximately 8,000 participants. Amongst this group of 8000, offspring smoking was examined as a function of maternal smoking history (mothers who had not smoked during or after pregnancy, mothers who had not smoked during pregnancy but were smoking at follow-up, mothers who had smoked during pregnancy and reported smoking at follow-up, and mothers who smoked during pregnancy but did not smoke at follow-up). Logistic regression analyses, adjusted for SES and paternal smoking in childhood, suggested that offspring of mothers who smoked both during and post pregnancy were more likely to report smoking at 16yrs (AOR: 1.64, CI: 1.2-2.2) than women who smoked in neither pregnancy or childhood. Smoking in adulthood (23yrs and 33yrs) was not significantly related to maternal smoking. Offspring of women who smoked only in pregnancy or only in childhood were not at an increased risk of smoking. Support or contradiction of these results is being sought within a comparable dataset (1970 British Cohort Survey). The implications of smoking in pregnancy for subsequent offspring smoking will be discussed.

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POS1-101

THE VALIDITY OF SELF-REPORTED SMOKING IN NON-PREGNANT AND PREGNANT LOW SES WOMEN

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Intervention programs aimed at women who are pregnant or are about to become pregnant often rely on the women’s self-report of smoking to measure effectiveness and to identify high-risk women. This study examined the validity of self-reported cigarette smoking in a sample of low SES childbearing women, and compared self-reports to saliva cotinine levels among non-pregnant and pregnant women. The Maternal Health Practices and Child Development Project is a longitudinal study examining prenatal substance use effects on child development. Adolescent women were assessed during pregnancy and with their offspring at multiple assessments. At the six year follow-up, there were 335 women who were asked about current smoking and provided saliva samples. Average age was 23 years (range: 19 – 27), 70 % were African-American, 30 % were Caucasian. Forty-one of the 335 women were currently pregnant. The average daily cigarettes and cotinine levels among the non-pregnant and pregnant women were 7.58 (range: 0 – 50); 119.4 ng/ml (range 0-641.7) and 5.78 (range: 0-50); 53.2 ng/ml (range 0 – 243.5), respectively. The correlation between self-reported daily cigarettes and cotinine level was 0.77 (p < .001) for the non-pregnant women and 0.68 (p < .001) for the pregnant women. Using a cutoff cotinine level of 20 ng/ml and 1+ cigarettes/day, sensitivity was 0.97 and 0.94 for non-pregnant and pregnant women, respectively. Specificity was 0.97 and 0.87 for these respective groups. Low SES childbearing women were found to be valid self-reporters of smoking, and pregnant women did not differ from non-pregnant women in the validity of their reporting.

This study was conducted at the University of Pittsburgh and supported by NIDA09275.

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POS1-102  INCREASED EXPIRED AIR CARBON MONOXIDE CONCENTRATION IN DELIVERING MOTHERS AND THEIR SPOUSES IS ASSOCIATED WITH DECREASED FETAL GROWTH

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Background: Increased fetal carboxyhemoglobin concentration (FCoHb) leads to hypoxemia and may result in reduced fetal growth. Expired air carbon monoxide (CO) is linearly related to carboxyhemoglobin. Objective: To assess whether maternal CO is associated with birth weight and head circumference as measures of foetal growth. Participants: 300 smoking and non-smoking pregnant women with normal delivery, their spouses and their normal term new-borns. Dependent measures: CO during delivery, FCoHb determined in the cord blood, birth weight, head circumference, foetal heart rate during delivery. Results: Birth weight dose-dependently and significantly decreased with increasing level of maternal CO (0-5: 3408 ± 32; 6-10: 3048 ± 57; 11-20: 2858 ± 54; >20 ppm: 2739 ± 53 g (adjusted means ±SE, p<.0001). Even the birth weight of new-borns whose mother CO between 6 and 10 was significantly lower than the birth weight of new-borns whose mother had a CO between 5 and 5 ppm. Head circumference, and normal gestational age decreased also significantly with increasing CO. Cord blood FCoHb more than doubled when maternal CO was 11-20 compared to that of maternal CO between 0 and 5 ppm. The number of new-borns with normal foetal heart rate decreased dose-dependently with increasing maternal CO. The spouses’ CO of delivering women with CO of 0-5 ppm was dose-dependently associated with decreasing birth weight (0-5: 3504 ±47; 6-10: 3417 ± 86; 11-20: 3324 ± 77; >20 ppm: 3210 ± 87 g, p<.018), increasing FCoHb (p<.0001) and decreasing number of new-borns with normal foetal heart rate (p=.002). Conclusions: Expired air CO measured during delivery, a proxy of expired air CO during pregnancy, is dose-dependently and inversely associated with indices of foetal growth, and dose-dependently and positively associated with cord blood FCoHb and abnormal foetal heart rate. Even low CO (0 to 10 ppm) may be associated with significantly lower birth weight. Spouses’ CO of mothers with CO of 0-5 ppm is also associated with unfavorable indices of foetal growth.

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POS1-103  SMOKING IN EXPECTANT FATHERS

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Pregnancy is considered a “teachable moment” for encouraging women to quit smoking, yet few studies examine smoking of their male partners. Our study describes smoking behaviors of expectant fathers. Participants were 138 low-income, rural men living with pregnant partners. Telephone interviews indicated 49.3% of these men smoke. Smoking was associated with education (p <.0001) and having a partner who smoke (p = .0002). Current smokers averaged 16 cigarettes daily; they first tried smoking at age 14 and were regular smokers at age 16. In the past year 69% have tried to quit and 41% were advised to quit by a doctor. Of pregnant women identified as smokers, 78% were partnered to an expectant father smoker. For men who smoked at least 100 cigarettes in their lifetime: 19% had no intention of quitting within the next 6 months, 46% were considering quitting in the next 6 months, 15% were considering quitting in the next month, 5% quit for less than 6 months, and 15% quit for more than 6 months. We found high rates of smoking in low-income expectant fathers. However, many men appear receptive to cessation assistance given the numerous unsuccessful quit attempts and a majority of the men having intentions to quit in the near future. Excluding expectant fathers in prenatal smoking cessation efforts is a missed opportunity to reduce smoking in young adults who could improve maternal, paternal, and family health. Research addressing the feasibility and efficacy of providing smoking cessation to both expectant fathers and mothers during pregnancy is needed.

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POS1-104  PREGNANCY AND SMOKING AMONG YOUNG ADULTS IN CANADA


In Canada, according to data collected in 2002 by the Canadian Tobacco Monitoring Survey (CTUMS), an ongoing national survey of over 20,000 Canadians, smoking rates among young adults (20-24 years) are notably higher than those for older age groups (31% vs. 20%) with males reporting the highest rate (31%). Twenty-three percent smoke daily and 8% occasionally. A pregnancy within the last 5 years was reported by 20% of females of which 24% reported smoking during their most recent pregnancy. A higher exposure to environmental tobacco smoke (ETS) from a smoking spouse was reported among this age group. Although young adults have the lowest rate of nicotine dependence (17%) among daily smokers compared to all other age groups (20% for 15-19 year olds and 26% for 25+ years), smokers haven’t identified a lot of success with quitting, 43% reporting no quit attempts in the past year and few long term quitters (16%). Thirty percent report no intention of quitting within the next 6 months. These statistics raise concern on a number of fronts including health risks to the smoker (long term); the unborn fetus, newborn and young children given that this age group is at the beginning of their reproductive years; and the long term impact on future generations since research has shown that children are twice as likely to smoke if their parents smoke.

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POS1-105  SMOKING DURING PREGNANCY: EFFECT OF PREVIOUS BIRTHS

Felix A. Okah, MD*, Jinwen Cai, MD, Gerald L. Hoff, PhD

Pregnancy provides a unique opportunity for educating women on the health impact of smoking. It is known that women with medical problems may become less concerned about the health implications of their behaviors during pregnancies following previous pregnancies (PBL). It is unknown whether smoking rates increase with repeat pregnancies, therefore, we conducted a retrospective study to test the hypothesis that smoking rates are higher among women with at least one PBL compared to women without PBL, over a 13-year period, 1990-2002. The cohort was 50% White, 54% 20-34y, and 41% (n=38,503), 29% (n=27,479) 0-PLB, 1-PLB, and >1-PLB, respectively. Smoking rates were related to PBL[>1-PLB=25.3% (24.8-25.8%)] v 0-PLB=16.5% (16.1-16.9%)] v 0-PLB=12.5% (12.2-12.8%)], trimester of entry into prenatal care (PNC) [first=14.8% (14.6-15.1%) v second=26.3% (25.5-27.1%) v third=none=35.4% (34.0-37.0%)], race [Whites=20.9% (20.5-21.2%) v Blacks=15.9% (15.5-16.3%) v others=7.8% (7.1-8.1%)], age<[20y=16.1% (15.5-16.7%) v 20-34y=17.5% (17.2-17.8%) v >34y=16.3% (15.4-17.1%)], education([≤13y=23.8% (23.4-24.2%) v ≥13y=8.4%(8.1-8.7%)], marital status[single=23.4% (22.9-23.8%) v married=11.5% (11.2-11.8%)], and medicaid status[yes=24.1% (23.7-24.5%) v no=12.1% (11.8-12.4%)]. Yearly smoking-smoke rates were consistently lower for 0-PLB although the smoking rates for all groups decreased over time, p=0.001. Multivariable logistic regression showed higher odds (OR) of pregnancy-smoking with higher PBL[>1-PLB OR=2.01 (1.9.1-2.12); 1-PLB=1.38 (1.31-1.45); 0-PLB=1.00]. Whites [Whites=6.05 (5.52-6.62); Blacks=1.45 (1.32-1.59); Others=1.00], late PNC [third/none=1.99 (1.84-2.16); second=1.36 (1.29-1.44); first=1.00], Medicaid[yes=1.74 (1.62-1.79) pregnancy period (2000-2002=0.69 (0.56-0.83); 1995-1999=0.72 (0.69-0.75); 1990-1994=1.00], age<20y=0.53 (0.50-0.57); ≤34y=1.26 (1.17-1.35); 34y=1.00) and education[<c8=2.83 (3.52-3.18); 9-12y=2.93 (2.79-3.08); >12y=1.00]. These findings indicate that rate of smoking during pregnancy increases with successive pregnancies. It may be that with repeated pregnancies, less attention is paid to health risks of smoking by women and/or their health providers. Therefore, health care providers should maximize smoking intervention and prevention during the “health-conscious” initial motherhood and reinforce them during subsequent pregnancies, irrespective of the woman’s previous pregnancy outcomes.

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**POS1-106**

**RISKS FOR NICOTINE DEPENDENCE AMONG REGULAR SMOKERS IN THE NEW ENGLAND FAMILY STUDY**


The development of nicotine dependence among smokers significantly reduces the likelihood of cessation. Identifying risk factors for nicotine dependence is important for preventing dependence onset; similarly, identifying predictors of quitting smoking among those who are nicotine dependent is needed in order to target those individuals who are likely to experience the greatest difficulty quitting. We investigated the onset and persistence of nicotine dependence in the New England Family Study (NEFS) birth cohort. Subjects were 777 regular smokers born in Providence, Rhode Island between 1959 and 1966 and followed to adulthood (mean age=29.1 years). First, we examined potential socioeconomic, demographic, and clinical risk factors for progression from regular smoking to DSM-III nicotine dependence. Second, among those who ever developed nicotine dependence (n=562), we identified predictors of current-year abstinence. Maternal smoking during pregnancy, lower maternal education, exposure to violence during childhood, prior drug abuse or dependence, younger age at first daily smoking, and lower educational attainment were associated with elevated lifetime risks of nicotine dependence. Both maternal education (at birth) and subjects’ own educational attainment were positively associated with current-year abstinence. We conclude that risks for nicotine dependence are identifiable early in childhood, accumulate over the life course, and contribute to smoking persistence. Future work with the NEFS cohort will investigate the mechanisms underlying these associations.

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**POS1-107**

**RELATIONS BETWEEN DEPRESSION AND CIGARETTE ADDICTION DURING PREGNANCY AND POSTPARTUM**

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Relations between depression and cigarette smoking during pregnancy and postpartum have received little attention. Among nonpregnant smokers, research indicates a strong relationship between depression and smoking. While smoking rate appears to covary with negative affect, the direction of influence has yet to be established. The purpose of this study is to investigate the relations between levels of depression and addiction during pregnancy and postpartum. Pregnant women in their 2nd trimester (N=264) who were recruited for a smoking cessation intervention were assessed at their initial visit (T1), 34th week of pregnancy (T2), and 6 weeks postpartum (T3). Depression was measured using the Beck Depression Inventory, and addiction was measured using two items (i.e., time until 1st morning cigarette, number of cigarettes per day). Cross-lagged panel analysis was used to disentangle longitudinal associations and plausible causal relations between depression and addiction. Two consecutive time intervals (T1 to T2; T2 to T3) were used to permit replication of findings across time. Results indicated that the prediction of addiction by depression changed from interval one to interval two (p<.002). No association was noted: addiction neither positively nor negatively predicted postpartum addiction (p=.009). Addiction did not predict depression at any timepoint. Neither addiction nor depression demonstrated causal predominance, however. Interventions targeting end of pregnancy depression may be effective in decreasing levels of postpartum smoking. The failure to find any relation between depression and addiction during pregnancy highlights the unique nature of smoking in pregnancy.

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**POS1-108**

**FORMATIVE EVALUATION IN THE DEVELOPMENT OF RELAPSE PREVENTION MATERIALS FOR PREGNANT AND POSTPARTUM WOMEN**

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Maintaining tobacco abstinence among pregnant and post-partum women remains a challenge. Although cessation rates among pregnant women have improved, postpartum relapse is common, with half resuming smoking by 12 weeks post-delivery. To adapt existing relapse prevention materials to the unique needs of this population, semi-structured interviews were conducted with 38 women comprised of pregnant abstinent (14); postpartum abstinent (12); postpartum relapsed (12), as well as 6 partners. Content of the interviews were coded and analyzed for key themes, using grounded theory. Results revealed exceptional needs for coping and stress reduction strategies related to remaining abstinent postpartum. Participants expressed strong desires to return to their former self both physically and emotionally, or to revert to a time when there was less stress in their life. Conflict levels were high in the areas of weight gain, identity, social support, and reasons for quitting. For example, women noted that smoking was related to their former self-concept, prior to giving birth. Smoking was also noted as a way to reduce stress. Most women stated that their partners were supportive of smoking cessation efforts during the pregnancy, such as quitting along with them or curtailing smoking in their presence. However, they also reported that partners return to old habits after the birth of the child. Data from these interviews were used to revise existing, validated, relapse prevention materials (“Forever Free”) and create targeted messages to address the specific requirements of pregnant and postpartum women who desire to maintain tobacco abstinence.

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**POS1-109**

**ASSISTING PREGNANT SMOKERS TO QUIT: ARE THEY GETTING THE HELP THEY NEED FROM PROVIDERS?**

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Background: Obstetric providers often miss opportunities to counsel smokers during prenatal care. Guidelines have been developed, but it is unclear how many or which pregnant smokers receive interventions. Methods: We assessed prenatal provider interventions reported at baseline by 317 pregnant smokers enrolled in telephone-delivered smoking counseling trial. Patients were referred by their providers. Results: Mean age was 28 years; 89% were white. Over two-thirds were nicotine dependent (smoked <30 minutes after waking) prior to pregnancy. At enrollment, mean gestation was 14 weeks; median number of prenatal visits was 2. Sixty-six percent had been counseled about quitting. Women with repeated prenatal visits were no more likely to have received counseling than women with only one prenatal visit. Twenty-one percent had discussed cessation medications (NRT or bupropion) with their provider. To identify whether patients had been offered any type of help from their provider, we created an assist variable (referral to another program, medication, talked to about methods to quit or counseled, or given materials) and found that 79% had been assisted. The likelihood of a provider offering assistance was unrelated to patient demographics, smoking behaviors, or motivation to quit, with one exception: NRT, but not bupropion, was more often discussed (p<.05) with women who were heavier smokers and nicotine dependent. Conclusion: One-third of pregnant smokers referred to a telephone counseling program by their providers did not recall receiving provider counseling about smoking. There is a lack of association between smoking assistance and patient characteristics. Provider or practice characteristics may explain the variability in interventions and should be explored in future work.

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Statewide quitlines for smoking cessation are popular and well utilized. Since existing statewide quitlines are easy to access, free, and flexible in addressing individual needs, they are well suited to pregnant smokers, who often struggle with fatigue, financial pressures, and issues related to physical and emotional health. A recent nationwide media campaign by the American Legacy Foundation to publicize quitlines targeted pregnant smokers specifically. However, the efficacy of this form of intervention for pregnant smokers has not been established. The California Smokers' Helpline conducted a randomized trial, recruiting 1101 pregnant smokers who called for services. Around 67% had been advised by their physicians to quit smoking during pregnancy. Subjects were randomized to telephone counseling or self-help. Those in the self-help group received a quit kit of written materials, including the American Cancer Society booklet for pregnant smokers. Those in the treatment group received the quit kit plus up to 7 counseling calls (1 pre-quit, up to 6 follow-up). At the 3rd trimester evaluation, 21.4% of the counseling group vs. 12.4% of the self-help group had been quit for 30 days (p<.001). Of subjects who made a quit attempt, 46.7% in the counseling group vs. 25.7% in the self-help group remained quit for the duration of their pregnancy. These results show that telephone counseling can be an effective way to help pregnant women quit smoking. Given the devastating health consequences of smoking during pregnancy, healthcare professionals should promote quitlines widely among pregnant smokers.

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POS2-001
CANADIAN VIEWS ON SMOKING RESTRICTIONS IN PUBLIC PLACES
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Research has confirmed a range of health effects caused by environmental tobacco smoke (ETS) in adult non-smokers and in children. Concurrent with this is growing public concern about exposure to second-hand smoke in public places. The current study furthers this body of research by examining Canadian views on smoking restrictions in various public places (i.e. restaurants, bars and taverns, workplaces, patios, and beaches and parks). Data were collected by computer-assisted telephone interviews from July 2001 to January 2002 in a population-based survey (N=5,009) of Canadian adults, aged 18+. We oversampled households with smokers and children and developed population-based estimates of household exposure and beliefs about effects of second-hand smoke. Descriptive analyses and logistic regression models for the five public areas were conducted. Overall, Canadians supported no exposure to ETS (i.e. no smoking or separate ventilation) in workplaces (83.8%), in restaurants (77.6%), in bars and taverns (56.1%), and to a lesser extent on patios (46.2%), and on beaches and in parks (22.9%). Support for restrictions in workplaces, restaurants, patios, bars and taverns were related to being female, having a post-secondary education, being a non-smoker, living with other non-smokers, restricting smoking in your home, and perceiving ETS as harmful. Support for restrictions on beaches and in parks were not generally influenced by any of the factors analyzed. These findings can be used to develop policies and public education programs to increase support for smoking restrictions in public places and to reduce ETS exposure.

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POS2-002
INDOOR PASSIVE SMOKING IN RURAL EGYPT
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A survey of 4906 adult persons living in 4 rural villages in Egypt was carried out to study passive smoking attitudes and exposures. Seventy four percent of non-smoking households and 97% of smoking households allow smoking in some or all areas of their homes (p<0.001). Nearly two thirds (65%) of respondents in smoking houses reported that they were exposed to passive smoking at home all seven days in the week preceding the survey compared to only 17% of respondents in smoke free houses(p<0.001). More than three quarters (77%) of non-smokers in smoke free houses asked somebody not to smoke in their presence during the past year compared to57% of non smoking respondents in smoking houses (p<0.001). Almost all (99%) non smokers agreed that passive smoking is harmful to them, to fetus and to children Egyptian law bans smoking in public buildings. Among respondents working inside building, 48% reported no restrictions on smoking inside buildings and smoking occurred through out the buildings and only 16% reported enforcement of the ban on smoking indoors. In summary, the knowledge of dangers of passive smoking is extremely high but smoking is allowed in most of the homes and work places. A high number of non smokers have vocalized their objections to being exposed to passive smoking.

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POS2-003
A CROSS-SECTIONAL STUDY OF SECONDHAND SMOKE EXPOSURE IN WESTERN NEW YORK, 2003
Sara M. Abrams, MPH*, Martin C. Mahoney, MD, PhD, Andrew Hyland, PhD, and K. Michael Cummings, PhD, MPH

Exposure to secondhand smoke has been linked with a variety of negative health outcomes, including lung cancer and upper respiratory tract conditions. Recent policy changes in New York State have aimed to reduce exposure to secondhand smoke. The objective of this study is to examine differences in sources and levels of secondhand smoke exposure among hospitality and non-hospitality workers before and after passage of the statewide Clean Indoor Air Law on July 24, 2003, which eliminated smoking in nearly all indoor public places. The study population is comprised of non-smoking adults exposed to secondhand smoke at work, home, or other locations. Hospitality workers include individuals currently employed in bars, restaurants, casinos, bingo halls, or bowling alleys. Baseline data collection includes information on smoking history, occupational history, secondhand smoke exposure, respiratory symptoms, and demographics. Initial results show that the average number of hours exposed to secondhand smoke in any location during the five days preceding the interview was 15.1 for non-casino hospitality workers, 14.2 for non-hospitality workers, and 14.0 for casino workers. Non-casino hospitality workers reported an average of 18.4 hours of any secondhand smoke exposure in the previous five days before passage of the law, and an average of 10.7 hours after the law went into effect. Any exposure to secondhand smoke in the previous five days was significantly correlated with having a stuffy nose or a sore throat in the previous six months. Subsequent analyses will quantify levels of secondhand smoke exposure and provide details of sources of secondhand smoke exposure.

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POS2-004  TOBACCO INDUSTRY ANALYSIS OF SECOND-HAND SMOKE

Suzaynn Schick, Ph.D.*, Stanton Glantz, Ph.D.

Objectives: To determine what the tobacco industry and the greater scientific community knew about the chemical content and biological effects of secondhand smoke prior to public awareness of its hazards. Methods: Searches of the tobacco documents and the open scientific literature. Results: Tobacco industry researchers began studying secondhand smoke in the early 1930’s, after public health researchers in Germany established basic techniques and apparatus, in an effort to regulate labeling of low nicotine and nicotine-free cigarettes. Researchers at American Tobacco Company established that sidestream was more alkaline than mainstream smoke and contained twice as much nicotine and 12 times as much ammonia. Portions of these results were published in 1937, but the figures for nicotine level in sidestream are lower than those in the unpublished reports. By the end of the 1950’s, tobacco industry chemists knew that sidestream smoke contained higher concentrations of toxics like carbon monoxide and polycyclic aromatic hydrocarbons, and that combustion produced 4-5 times more sidestream than mainstream smoke, by weight. The 1960’s saw the first product development programs based on sidestream odor, and the inclusion of sidestream odor in standard product assessment tests. Conclusion: The tobacco industry had detailed information on the toxic chemical content of secondhand smoke decades before the greater scientific community and the general public thought to consider it a hazard.

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POS2-006  INDOOR AIR QUALITY BEFORE AND AFTER THE NEW YORK STATE CLEAN INDOOR AIR LAW IN WESTERN NEW YORK HOSPITALITY VENUES, JULY TO SEPTEMBER 2003

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New York State passed a law requiring most indoor public places, including bars, restaurants, and other hospitality venues, to be 100% smoke-free effective July 24th, 2003. This provided an opportunity to examine the quality of the air in these establishments before and after the law went into effect. The objectives of this study were: 1) To quantify the relative levels of respirable particulate matter (PM2.5) in the air in venues where smoking is permitted and where smoking is not permitted in Western New York, and 2) To quantify the change in respirable particulate matter in the air in venues in Western New York before and after the implementation of the smoking regulations on July 24th, 2003. In July of 2003, before the smoking regulations took effect, 22 venues including bars, restaurants, bowling alloys, a pool hall and a bingo hall were sampled using a TSI SidePak AM510 Personal Aerosol Monitor equipped with a 2.5-micron impactor. Compared to smoke-free restaurants, bars and restaurants with different degrees of smoking restrictions had, on average, between 3.7 and 14.1 times the level of PM2.5 before the law went into effect. All sampled venues showed a reduction in average PM2.5 level after the law went into effect, with bars and taverns showing an average 89% reduction. These data show that indoor air pollution in hospitality venues has been markedly reduced since the statewide clean indoor air law took effect.

Funding for this study was provided by the Flight Attendant Medical Research Institute

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POS2-007  REDUCING CHILDREN’S ENVIRONMENTAL TOBACCO SMOKE (ETS) IN PRIVATE PLACES: A QUALITATIVE STUDY OF TOBACCO CONTROL ADVOCATES AND POLICY STAKEHOLDERS

Kim Bercovitz*, Joanna Cohen, Roberta Ferrance, Rebecca Haines, Blake Poland, Peter Selby and Donna Stewart

Objectives: To explore the feasibility of policy options and program interventions for reducing infant/child exposure to ETS in homes and vehicles. Methods: Semi-structured interview were conducted with 25 key informants from public health, health advocacy organizations, professional associations, child welfare, law, medicine, and government agencies. Interviews focused on the potential role of legislation in private places and elicited recommendations on what ETS control measures would ?look? like and how they could be enacted. Results: There was strong consensus regarding opposition to ETS legislation in private places. Efficacy, enforcement and civil liberties were identified as key barriers. Discourses of denormalization, prevention, protection and cessation were consistent across key informants. There was a diversity of viewpoints that positioned ETS as a complex moral, social and child health issue. There was also concern that legislation has punitive, unintended consequences insofar as it disproportionately affects families that are already marginalized. A need for an integrated approach involving mass media campaigns, health education and clinical interventions was identified. Conclusion: The possibility of implementing ETS policies in private places is an area of dis-sensus among tobacco control advocates. In lieu of regulatory strategies in the home, a progressive approach focusing on first eradicating ETS from public places was recommended. A ?soft? sell approach involving culturally sensitive messages which convey the health risks associated with infant/child exposure to ETS is needed. Finally, ETS policy in the home cannot be seen in isolation of interpersonal household dynamics.

Canadian Tobacco Control Research Initiative

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POS2-008  SMOKE-FREE POLICIES ARE ASSOCIATED WITH GREATER RISK AWARENESS

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Smoke-free rules in homes and workplaces have been associated with decreased consumption and increased cessation. The pathway for such changes is not well understood. This study focuses on the contribution of the smoking prohibition rules at home and at work to individual’s perceptions of the risks of smoking. The Wisconsin Tobacco Survey (WTS, 2001) collected information on smoking attitudes, behaviors and knowledge from 6135 Wisconsin adults. Respondents’ home and work smoking rules were reported and multiple questions were included to assess their perception of the risk of smoking. Using logistic regression analysis, we found that smoking rules at home and in employment are positively associated with both smokers and nonsmokers’ perceptions of the risks of getting lung cancer, heart disease and emphysema from smoking. This finding remained after controlling for smoking status and demographic variables including gender and education. The causal relationship between smoke-free rules and risk perception cannot be identified in this cross-sectional study. Social cognitive theory leads us to believe, however, that the association we found between smoke-free rules and perceived risks of smoking may be reinforcing and suggests a pathway for behavior change.

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POS2-009  HISPANIC SMOKERS: ALTRUISM AND SUPPORT FOR SECOND HAND SMOKE RESTRICTIONS

Lyndon Haviland DrPH*, Donna Vallone PhD, Jane Allen MPH

This study uses telephone survey data from the 2002 American Smoking and Health Survey (ASHES) to explore differences in beliefs, attitudes and behavior about secondhand smoke exposure by Hispanic ethnicity. Forty percent (40%) of Hispanic adults report a high level of concern about the impact of tobacco use on their own health, and 60% are very concerned about the impact of cigarette smoke on those around them. Among other adults, 34% are very concerned about their own health, while 31% report being very concerned about the health of those around them. Concern about secondhand smoke exposure among Hispanic adults translates into smoking bans in the home, and may provide critical information about culturally tailored messages smoking prevention and cessation strategies. Most Hispanic smokers (86%) reported that there was no smoking in their home during the past week, compared with only 29% of non-Hispanic smokers. The findings suggest opportunities for intervention to reduce exposure to secondhand smoke. ASHES is an American Legacy Foundation survey designed to gather information about adult tobacco use, with a focus on new and “reduced risk” tobacco products, use of pharmacotherapy and other cessation aids and secondhand smoke exposure. This study is based on responses of 3,000 adults surveyed in spring 2002.

American Legacy Foundation

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POS2-011  A RANDOMIZED CONTROL TRIAL OF A SMOKING CESSION INTERVENTION ON PARENTS OF YOUNG CHILDREN- A PRELIMINARY REPORT.

Abu SM Abdullah(*), TH Lam, Yim W Mak, AY Loke

Purpose: The purpose of this study is to examine the effects of a smoking cessation intervention (proactive telephone counselling and education materials) on the success of quitting amongst smoking parents of young children. Method: Smoking parents of children aged 5 were randomly allocated into two groups: intervention group received printed self-help materials and four-session telephone-based smoking cessation counselling; control group received printed self-help materials only. A structured questionnaire was used for the purpose of data collection at baseline and at 1, 3 and 6-months follow-up. Results: As of the end of November 2002, a total of 1,086 eligible parents were approached and 894 (82%) completed the initial telephone interview. Of the interviewed smoking parents (n=894), 85% were fathers, 91% were regular smokers, 83% reportedly smoking at home everyday, and 21% had tried to quit smoking at least once in the previous year. Regarding the intention to quit, 72%, 19%, 3%, 5%, 0.3% of the parents were in the pre-contemplation, contemplation, preparation, action and maintenance stages respectively. After the initial interview, 77% (692/894) parents agreed to participate in the telephone-based smoking cessation program (356 were randomized into intervention and 337 into control group). Follow-up at 6-months was successfully completed for 186 intervention and 218 control participants. The 7-day point prevalence quit rate (abstinence from tobacco smoking during the 7-days preceding the 6-month follow up) was 12.4%(24/193) and 9.7% (23/238) for intervention and control groups respectively after adjustment for losses and refusals to follow-up. Conclusions: These results indicate the feasibility of a telephone-based smoking cessation service among Chinese smoking parents with young children. The quit rate is comparable to those in other populations.

Health Care and promotion Fund, The Government of the Hong Kong SAR.

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POS2-010  MOTIVATING PARENTS OF KIDS WITH ASTHMA TO QUIT SMOKING: PRELIMINARY EFFECTS ON ETS AND SMOKING CESSATION

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We contrasted two theory-based smoking cessation interventions for low-income caregivers of children with asthma. Caregivers who smoked (N=218; M age=32.6, 87% female, 60% unpartnered, 52% White, 20% Black, 20% Latino, 32< high school education, M=14.6 cig/day); had an asthmatic child, and were receiving in-home, nurse-delivered asthma treatment, were randomly assigned to receive one of two nurse-delivered smoking interventions: 1) Behavioral Action Model (BAM), based on AHQR guidelines, targeting self-efficacy to quit, or 2) Precaution Adoption Model (PAM), which uses Motivational Interviewing to deliver feedback on the smoker’s Carbon Monoxide level and the child’s Environmental Tobacco Smoke (ETS) exposure to increase risk perception. Free nicotine patches were available. ETS was measured objectively, through passive dosimeters, placed in the home and on the child. We hypothesized that enhancing risk perception to self and child would motivate quitting more than standard approaches. Intent to treat analyses showed that, at 2 months post-treatment, 22.7% of PAM and 11% of BAM reported >=7 days of abstinence (RR = 2.06, 95% CI 1.03-4.12). For dosimeters placed on the child, PAM showed significant reductions in ETS vs. BAM; this effect was greatest among those with elevated baseline levels of ETS (p = .007). For dosimeters placed in the home, treatment group did not predict ETS levels. Results will help tailor interventions to this population and identify mechanisms of behavior change.

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POS2-012  HEALTHY TOTS INTERVENTION TO REDUCE CHILDREN’S PASSIVE SMOKE EXPOSURE AND TO HELP MOTHERS QUIT SMOKING - PROGRAM ENDORSED BY MOTHERS


Low income mothers who exposed their children under age four to a minimum of three cigarettes per day were enrolled in a randomized controlled trial. Those in the experimental condition (n=76) received up to 14 counseling sessions over 5-8 months. Over half of the mothers (54%) attended all 14 sessions and the average session length was 28 minutes. Counseling focused on shaping behavior related to reducing child’s Second Hand Smoke (SHS) exposure and on cessation techniques and nicotine replacement therapy (patches or gum) for mothers interested in quitting smoking. Fifty-one mothers completed a phone interview after the counseling sessions. Fifty-one mothers completed a phone interview after the counseling program ended: 84.3% received either patches or gum and 41.2% received both patches and gum. 82.4% felt that 14 or more sessions would be the right number of sessions for the program, 86.3% felt the session length was about right, and 88.2% were satisfied with the amount of education (counseling). 90.2% felt the goal setting was somewhat or very useful for reducing their child’s SHS exposure and 80.4% felt the goal setting was somewhat or very useful for quitting smoking. 96.1% indicated they would recommend this program to a friend and 100% felt WIC clinics should provide this education (counseling) to their clients.

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POS2-013  

**PEDIATRIC PRACTICES AND ATTITUDES TOWARD PARENTAL SMOKING: IMPLICATIONS FOR ETS-REDUCTION TRAINING**

Bradley N. Collins*, Kenneth Levin, Tyra Bryant-Stephens

Pediatricians appear informed about ETS-related health consequences. However, pediatricians have been slow to implement treatment guidelines, particularly with regard to parental smoking. Little is known about how levels of training and experience influence attitudes toward smoking parents, and how these attitudes influence pediatricians’ tobacco intervention behavior across treatment settings and in response to different ETS-related clinical presentations. This analysis examined pediatricians’ responses to a questionnaire designed for a physician-training needs assessment in an ongoing ETS-reduction trial. Regardless of years of experience, 93% reported having less than two hours of previous tobacco intervention training, with 93% stating they would welcome more thorough training. Approximately 70% of pediatricians reported negative attitudes toward smoking parents characterized by disgust and anger. These attitudes were negatively related to beliefs about their ability to positively influence parental smoking behavior change, to the frequency of providing related advice and referrals, and to the amount of tobacco intervention training they received in medical school (Pearson r’s > .20, p’s < .05). Chi square analyses demonstrated no differences between pediatrician specialty and frequency of ETS assessment and smoking advice, with less than 50% of all pediatricians reporting consistent guideline adherence. Regardless of attitude, pediatricians were less likely to address parental smoking in the ED compared to clinic and inpatient settings (p’s < .05). Results suggested that pediatricians are receptive to comprehensive tobacco intervention training, and that addressing negative attitudes about parental smoking during training could dramatically improve the quality and frequency of pediatricians’ ETS assessment, advice for ETS reduction, and provision of ongoing follow-up of parental smoking behavior.

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POS2-014  

**NON-MEDICAL “HEALTH INFUENCERS” AS BRIEF TOBACCO INTERVENTIONISTS: ATTITUDES, BELIEFS, AND BARRIERS**


Brief interventions for tobacco cessation have traditionally been considered the responsibility of healthcare providers. Poor adherence of medical professionals to brief intervention guidelines and lack of broad healthcare access highlights a need to expand cessation intervention training to non-medical “health influencers”. As formative research for a controlled trial of community-based models for brief tobacco cessation intervention training, we conducted eight focus groups with four types of health influencers to examine the relationship between professional discipline and attitude and inclinations toward intervening with tobacco users. Participants represented the fields of social work, education, law enforcement, and clergy. Focus group transcripts were supplemented by brief questionnaires rating the appropriateness of different professions to intervene with tobacco users. Qualitative results indicated that non-medical health influencers were willing to intervene with tobacco users. Motivations to intervene and perceived role in intervention varied by job structure, ability, opportunity, and characteristics of the tobacco user. All groups had differences in motivators to intervene in personal versus professional situations. Barriers to intervening differed between groups and included fear of confrontation, lack of time, and lack of skills. All groups rated medical professionals (doctors, nurses) as most appropriate to intervene with tobacco users, with managers, clergy and law enforcement rated less appropriate. No groups were rated very inappropriate to intervene. These findings have implications for developing training that addresses the multiple contexts facing non-medical personnel willing to intervene with tobacco users.

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POS2-015  

**DENTAL HYGIENISTS’ TREATMENT INTERVENTIONS WITH DENTAL PATIENTS WHO USE TOBACCO**

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Dental hygienists are uniquely positioned to help patients who use tobacco, because they spend considerable time with patients and because tobacco use contributes to dental disease. This study explored the tobacco-related patient contact of dental hygienists who responded to an invitation mailed to 2,000 randomly selected American Dental Hygienists Association members. N=552 (27.6%) participated either by Web-based survey (n=509) or by telephone (n=43). Of the 95.3% working directly with patients, 86.5% reported asking patients about tobacco use, 86.8% reported explaining the risks of tobacco exposure, and 84.1% reported advising patients to avoid or stop using tobacco. Respondents estimated that 27.5% of patients used tobacco. However, only 50% of respondents reported recommending or providing treatment. Compared to those not providing recommendations or treatment, those with treatment-related patient interactions were more likely to learn about tobacco cessation from colleagues (F=19.2[1,463], p<.0001), professional meetings (F=6.4[1,454], p<.0012), journals (F=8.8[1,462], p<.0032), newsletters (F=8.4[1,462], p<.0039), and continuing education (F=8.6[1,461], p<.0084). Those recommending or providing treatment also reported spending more time learning to help tobacco users (13.1 vs. 6.9 hr/yr; F=8.74[1,320], p<.0033) and indicated willingness to spend nearly twice as much time learning about tobacco cessation (31.5 vs. 15.8 hr/yr; F=9.21[1,355], p<.0026). The two groups did not differ in number of patients seen per week or percentage of patients using tobacco. These findings underscore the need to provide current information to motivated professionals, particularly through publications and continuing education, and to enhance resources and training available to professionals with less training and confidence in helping tobacco users quit.

Funding was provided by the Center for Health Sciences and the Policy Division of SRI International.

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POS2-016  

**TOBACCO CESSATION ACTIVITIES BY DENTISTS: A NATIONAL SURVEY OF DENTISTS’ KNOWLEDGE, ATTITUDES AND BEHAVIORS**

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A survey was utilized to assess the tobacco cessation knowledge, attitudes, and behaviors of dentists participating in a large national managed care dental plan. The survey was administered to dentists who were recruited to participate in a research program to test information technology, specifically the use of a tobacco CD-ROM and supportive electronic detailing to promote increased tobacco cessation activities by dentists. Dental offices in the U.S. with >200 Aetna Dental adult Dental Maintenance Organization (DMO)® patients (pending meeting necessary technical requirements), were eligible to participate in this study. 816 of the 6822 DMO offices in the United States met all criteria for inclusion in the study. 178 offices in 38 States agreed to participate and were randomly assigned to either the intervention or control conditions. Self-reported baseline tobacco related behaviors were low. Only 38% reported asking patients about their tobacco use more than 41% of the time, while 45% advised patients who use tobacco products to quit more than 41% of the time. 28% discuss setting specific quit dates with patients interested in quitting, and these dentists were also more likely to discuss tobacco in the context of general and oral health, the benefits of quitting, and to provide specific strategies for quitting for patients. 72% of the respondents reporting that they did not discuss the setting of specific quit dates with patients interested in quitting tobacco use. 55% reported that their knowledge about helping people stop using tobacco was poor or fair, while only 18% reported that their rated their knowledge as good or excellent. This national survey reveals that dentists do not routinely incorporate tobacco cessation into their practices. These results may not be representative of all dentists. Newer information transfer technologies may serve as vehicles for increased smoking cessation activities by dentists.

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POS2-017  PRACTICES AND ATTITUDES OF ANESTHESIOLOGISTS AND SURGEONS REGARDING SMOKING CESSATION IN SURGICAL PATIENTS

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Elective surgery presents an opportunity for cessation interventions in smokers, given the detrimental effects of smoking on surgical outcomes and the fact that patients must be abstinent while in smoke-free facilities. We surveyed practices and attitudes of anesthesiologists and surgeons regarding cigarette smoking cessation in the perioperative period. Questionnaires were mailed to 1000 active members each of the American Society of Anesthesiologists and the American College of Surgeons. Response rates were 33% and 31%, respectively. Over 90% of both groups almost always ask their patients about tobacco use, and almost all respondents felt that surgical patients should maintain abstinence for as long as possible after surgery. Approximately 70% of anesthesiologists and 90% of surgeons felt that it was their responsibility to advise their patients to quit smoking. However, only 30% of anesthesiologists and 58% of surgeons routinely do so; 84% of anesthesiologists and 40% of surgeons report having never provided resources to help their patients quit, such as referral for nicotine dependence treatment. Nonetheless, 64% of anesthesiologists and 76% of surgeons reported that they would be willing to spend an extra five minutes preoperatively to help their patients quit. Reported barriers to intervention included a perceived lack of effective interventions, insufficient time to intervene, and a lack of training and knowledge regarding intervention techniques. Because about 40% of both groups would be willing to attend local or national workshops that teach intervention techniques, we conclude that intervention opportunities are not consistently exploited in the surgical population; educational efforts directed at the physicians in the surgical specialties are indicated.

Mayo Foundation, Minnesota Partnership for Action Against Tobacco

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POS2-018  CANADIAN PHARMACISTS’ SMOKING CESSATION PRACTICES AND ATTITUDES: INDIVIDUAL, PROFESSIONAL, AND ENVIRONMENTAL FACTORS

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Pharmacists’ opportunities to counsel patients regarding smoking cessation have increased with the availability of NRT in pharmacies without prescription. The relationships of pharmacists’ smoking cessation practices to factors such as training, self-efficacy, professional involvement, and practice environment have not been explored. Models of health behaviour have been used to analyse health professional practice; this study applies behavioural models to pharmacists’ practices in helping patients quit smoking. Canadian pharmacists’ perceptions of, attitudes toward, and practices of their roles in smoking cessation were examined with a detailed questionnaire. Education, tobacco-related attitudes, work setting, management and reimbursement, and professional involvement were also measured. We studied a random sample of community pharmacists practising in the Canadian provinces of Ontario, Québec, and Saskatchewan, and all pharmacists practising in Prince Edward Island. The response rate was 72% (N = 996). Data were analysed using a behavioural model including elements from the Health Belief Model, Social Cognitive Theory, and Diffusion of Innovation. Pharmacists’ knowledge of nicotine pharmacology and following up with patients are related to knowledge of patients’ smoking status, the likelihood of suggesting pharmacological aids to cessation, and assessing and referring patients. Personal and professional factors and practice environment also relate to smoking cessation practices. A behavioural model can help in understanding factors related to professional practices, and point the way to changes that facilitate smoking cessation roles for pharmacists.

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POS2-019  CESSTION ADVICE AMONG HEALTHCARE STAFF AT LONG-TERM RESIDENTIAL CARE FACILITIES

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Although the majority of health care facilities are smoke-free, nursing homes are an exception. Healthcare workers are generally encouraged to make every effort to help tobacco users quit, however, previous reports from residents in a single long-term care setting found that fewer than half of the residents who smoked reported receiving cessation advice from nurses (35.7%) and only slightly more (40%) received advice from a physician; just over half (54.8%) of licensed nurses and 34.6% of the nursing assistants reported ever giving residents advice to quit. This study provides preliminary findings from a nation-wide survey examining long-term healthcare staffs’ (physicians, nurses, and nursing assistants) advising practices in nursing homes. Descriptive analyses will report healthcare staffs’ attitudes toward resident smoking, their tendencies to advise residents to quit in general and across numerous situations, the barriers and facilitators to giving cessation advice, and their beliefs about resident smoking rates and readiness to quit. In addition, differences in staffs’ attitudes across smoking and non-smoking staff, job classifications, and those who do and do not report advising residents to quit will be analyzed. Residents in long-term care facilities interact daily with health care providers and are in a prime position to receive cessation advice and encouragement. Close living proximity, restricted mobility of many nursing home residents, safety concerns, and needs for assisted smoking present risks for all residents and staff. These findings, combined with future research examining the residents’ views regarding cessation, will assist in the development of effective training programs to influence staffs’ advising behaviors and ultimately impact residents’ smoking.

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POS2-020  TOBACCO USE INTERVENTIONS IN THE EMERGENCY DEPARTMENT: A MISSED OPPORTUNITY

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The Emergency Department (ED), with increasing visits and high tobacco-use rates among patients, provides a tremendous opportunity for impacting public health through tobacco use interventions. While previous studies of ED patients have demonstrated that smokers want to quit, little is known about the level of motivation for behavioral change in this population. A convenience sample of 376 adult ED patients seen in the ED at the Mayo Clinic in Rochester, MN was interviewed face-to-face. All patients were questioned about demographic information and previous tobacco use. Current tobacco users were surveyed about their stage of change and level of motivation (Contemplation Ladder) for smoking cessation. Their mean score on the Contemplation Ladder was 5.6 (S.D. a 2.7) [the anchor for a score of 6 is “I am thinking about cutting down or quitting”]. Of current smokers, 33% relied on the Emergency Department as their primary source of health care. While only 3% (3/92) of patients reported having received a tobacco use intervention in the ED, 44% (40) would have been interested in receiving one. Of the current cigarette smokers seen in the ED, almost one-third are in the preparation stage of change, they report high levels of motivation to quit, and many want tobacco use interventions through the ED.

No Funding

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POS2-021

VALIDITY OF CLINIC SELF-REPORT OF TOBACCO TREATMENT SYSTEMS

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Clinical systems support adherence to tobacco treatment guidelines. There is uncertainty as to how evaluate the clinic environment for the presence of tobacco treatment systems. We planned visits to primary care clinics drawn from the provider network of a large mid-western health plan. At each clinic, we interviewed a key informant about the presence of tobacco treatment systems. Clinics were also asked to provide copies of relevant clinic documents. Interview responses and clinic documents were compared using Cohen’s kappa. 97 of 131 clinics agreed to a site visit (74%). Interviews were conducted with clinic managers (67%) or clinical staff (i.e. head nurse, 33%). Agreement on the presence of tobacco treatment tools between interviews and documents was highest for Health Questionnaires (k=.72) and Chart Stamps (k=.60). Agreement was low for other tools: Problem List (k=.05), Progress Note (k=.28), Physician Prompts (k=.09), Specialized Treatment Forms (k=.13). Patient Education Materials (k=.24), Referral Resource Lists (k=.30) and Referral Forms (k=.36). Clinics were more likely to under-report (73%) than over-report (30%) the presence of tobacco treatment tools. Clinic and informant characteristics had little relationship to the level of under- and over-reporting. The validity of clinic self-reports was low for most system tools we examined. Future studies should use direct observational methods for determining clinic systems.

Blue Cross Blue Shield of Minnesota Center for Tobacco Reduction and Health Improvement

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POS2-022

ARE QUITTERS ON A HEALTH KICK?: USE OF PREVENTIVE HEALTH SERVICES FOLLOWING SMOKING cessation

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Research has shown that current smokers have many behavioral risk factors (e.g. heavy alcohol consumption, high-fat diet), use fewer preventive services (e.g. mammography, cholesterol testing), and engage in fewer health promoting behaviors (e.g. exercise, seat belt use) compared to never smokers and former smokers. Little is known about how changes in behavior patterns evolve, particularly alongside smoking cessation. This study aimed to evaluate whether quitters developed increased levels of health promoting behaviors and fewer behavioral risk factors post cessation. We used household survey data from the Health and Retirement Study (HRS), a nationally representative longitudinal survey initially conducted in 1992 with follow-ups every two years. Follow-ups from 1996 and 2000 were used for this study. Self-reported rates of regular seat belt use, regular exercise, cholesterol screening, flu shots, prostate exams, pap smear exams, mammography, and breast exams were considered as outcomes. We found that at baseline, current smokers had lower rates of use of preventive services, seat belt use, and physical activity compared to never or former smokers. In longitudinal analyses, we also found that compared with continuing smokers, recent quitters (< 2 years) had higher rates of cholesterol screening, while longer-term quitters (up to 6 years) had higher rates of exercise, mammography, and pap smear exams. Importantly, the adjustment for individual fixed effects changed the findings notably. Specifically, while cessation significantly predicted future behaviors in the above cases, the magnitudes were substantially reduced compared with an unadjusted model. Supported by a grant from The Robert Wood Johnson Foundation (#039787), as part of the Yale Transdisciplinary Tobacco Use Research Center.

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POS2-023

NATIONWIDE DISSEMINATION OF A TOBACCO CURRICULUM FOR HEALTH PROFESSIONAL STUDENTS

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Research consistently shows that students in the health professions receive inadequate training for assisting patients with tobacco cessation. In response to this need, the schools of pharmacy in California collaborated in developing Rx for Change, a comprehensive tobacco cessation curriculum for health professional students. The core lecture components (3-4 hours) include: epidemiology of tobacco use, forms of tobacco, nicotine pharmacology/principles of addiction, drug interactions, and methods for assisting patients with quitting. The workshop component (3 hours) includes hands-on experience with aids for cessation and role-playing. Pre- and post-training surveys reveal a positive impact of the program on self-rated ability (p<0.001 for each of the 5 As) and self-efficacy (p<0.001) for cessation counseling. The program has been required training for all pharmacy students in California for 4 years, all UCSF medical students for 3 years, and all UCSF dental students for 1 year. As part of a nationwide effort initiated in May 2003, Rx for Change has been disseminated through train-the-trainer programs to 181 faculty members representing 76 pharmacy schools, 34 nursing schools, 2 dental schools, and 1 medical school. With Baylor College of Dentistry, we are evaluating the program impact on post-graduation counseling practices. Based on dissemination to date, we estimate that more than 12,000 students will be exposed to Rx for Change annually. Because specialized training for tobacco cessation leads to increased counseling, and because clinicians have a proven positive impact on their patients’ tobacco use, it is imperative that health professional students receive comprehensive tobacco cessation training as part of their required curriculum.

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POS2-024

EFFECTIVENESS OF SMOKING CESSATION TRAINING MODULES IN DENTAL SCHOOL

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The dental school setting provides an excellent opportunity to train future dentists about the importance of assessing tobacco use and offering nicotine dependence treatment in dental practice. For the 1998-99 and 1999-2000 academic years, 10 hours of lecture on smoking cessation and related topics was provided to seniors at UT Dental Branch, Houston, Texas. Topics included: 1) epidemiological and psychological factors affecting smoking prevalence, cessation success, and co-morbidity influence; 2) implementing PHS guidelines for treating tobacco use; and 3) psychopharmacology. In the spring of 2003, a survey designed to assess attitudes and treatment approaches to tobacco use was mailed to dental school graduates (n=245) from 1998-2002. Surveys were returned from 112 (45.7% response rate). Fifty-percent of responding dentists (n=56) reported that they ask their patients about tobacco use more than 60% of the time. For their patients who use tobacco, 60.2% of the dentists (n=69) give advice to quit more than 60% of the time. However, 40.7% of the dentists failed to assist their patients in quitting (e.g., NRT, referral to cessation clinic, set quit date, etc.). Tobacco-control training was significantly associated with some attitudes and practices regarding tobacco treatment. Dentists who received training more highly prioritized the practice of counseling their patients about tobacco (t=1.7, p<0.04) and were more likely (OR=2.6, 95% CI 1.0-7.3) to recommend Zyban or other pharmacotherapies compared to dentists who did not receive tobacco-control training. These data suggest that a dental school-based tobacco-control training program can positively influence dentists’ attitudes about counseling and likelihood of offering nicotine dependence treatment.

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POS2-025

A COMPARISON OF BRIEF TOBACCO DEPENDENCE TREATMENT COUNSELING IN MEDICAL STUDENTS IN ROCHESTER, NY AND IRAKLIION, CRETE.

Constantine Farmakidis, Medical Student, Holly McGreggor, PhD*, Anthony Kafatos, MD, Kathyrn Markakis MD, Geoffrey Williams, MD, PhD, University of Rochester (UR) and University of Crete (UOC) Schools of Medicine USA, and Greece.

Background: Evidence exists that brief counseling increases tobacco abstinence. Medical schools have varying curricular content teaching Tobacco Dependence Treatment (TDT). This study compared self-reported TDT and underlying motives for counseling among graduating medical students at UR and UOC. Methods: Graduating Students in 2003 at UR and UOC responded to surveys regarding motives for counseling and TDT. Variables assessed included percent of patients counseled with the 5A's TDT follow-up, and student smoking, volition, autonomous and competence motivation for counseling. Results: Seventy-four percent of students at each school competed surveys (118 of 157). UOC students were more likely to smoke (42% vs. 3%, p<0.01) than UR students. UR students reported being more likely to Advise (p<0.01), Assess (p<0.01), than UOC students, yet no difference was found for Ask (p=0.98) or Arrange (p=57). UR students felt more support to do counseling (p<0.05), more autonomous (p<0.01) and competence (p<0.01) motivation to counsel than UOC students. No differences were found in volition for doing counseling (p=0.48). Discussion: The higher levels of motivation and TDT interventions reported by UR students may reflect differences in curriculum, culture, and personal tobacco use. UR students may have internalized a greater value for TDT than UOC students. Greater autonomy and competence to counseling may facilitate the integration of this training in the future.

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POS2-026

IMPLEMENTING A TOBACCO CURRICULUM IN MEDICAL SCHOOLS GLOBALLY

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Background: Deficiencies have been reported in teaching about tobacco in medical schools globally. We developed the Smokescreen Education Program (SEP), a 2-part tobacco curriculum for medical schools. Aims: To evaluate implementation of the SEP globally; ascertain barriers to use and factors that enhance successful use. Methods: Two questionnaires were developed to survey medical schools. The first ascertained receipt and use of the SEP and was sent/emailled to 198 medical schools with 61% response rate. Those using the SEP and agreeing to provide further information were sent Questionnaire 2 (Q2), which asked details about use of components of the SEP; 27/83 responses received. Results: 74% of medical schools globally were using SEP. 28% taught a specific module on tobacco; 55.5% integrated teaching about tobacco with other disciplines; and 5.5% had no systematic approach, but discussed tobacco. Translations of SEP into French, Italian, Chinese, Japanese, Laotian, Romanian, Farsi, Arabic and Turkish. SEP is compatible with prevailing values and culture; encourages addition of relevant teaching material; and is not complex. Implementation strategies identified as important included a key person who introduces and teaches the tobacco curriculum, a supportive Dean of medicine, training in SEP, and integration with other medical disciplines. Barriers to implementation included: limited teaching resources; lack of staff interest in teaching about tobacco; insufficient time in an already overcrowded curriculum to teach about tobacco. Conclusions: Improved strategies may increase access to the SEP among medical students.

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POS2-027

MEASURING PHYSICIAN COMPLIANCE WITH TOBACCO TREATMENT GUIDELINES: A COMPARISON OF ELECTRONIC MEDICAL RECORDS, PATIENT AND PROVIDER SURVEYS

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BACKGROUND: Clinical practice guidelines direct providers to counsel smokers at every visit using a “5As” strategy. To assess guideline compliance, a feasible, accurate method of measuring physician practice patterns is needed. Electronic medical records (EMR) are becoming common and may be a better method than paper chart review or surveys. We compared 3 methods of measuring physicians’ tobacco counseling practices: EMR, patient survey, and provider survey.

METHODS: A mailed survey of 1613 smokers seen by 114 Boston-area primary care providers between January-March 2002 assessed their receipt of each 5A at that visit. EMRs of those visits were reviewed and physicians were surveyed about their overall frequencies of performing each 5A. RESULTS: 110 providers (response rate=96%) and 766 patients (response rate=47%) completed surveys. Each 5A step was more often reported by patients than recorded in EMR, respectively (all p<0.001): ask (81% vs. 72%), advise cessation (81% vs. 32%), assess readiness (67% vs. 25%), assist (56% vs. 5%) and arrange follow-up (22% vs. 2%). Agreement between the patient survey and EMR was poor for all 5As (kappas ranging from 0.05-0.26): Physicians reported often/always performing most 5As at high rates: asking (96%), advising (97%), assessing (89%), assisting (67%), arranging follow-up (14%). However, there were few significant associations between physician responses and EMR documentation. CONCLUSION: This comparison demonstrated poor agreement among 3 methods of assessing 5A counseling by physicians. EMR review produced lower counseling rates than a patient or provider survey. While the true rate of counseling is unclear, the low EMR rates likely indicate underdocumentation. EMRs could be improved to facilitate provider documentation of tobacco counseling, which could increase the EMR’s utility in tracking tobacco guideline compliance.

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POS2-028

THE EFFECTS OF FEEDBACK AND REIMBURSEMENT ON PHYSICIANS’ RATES OF COUNSELING ABOUT SMOKING: A CONTROLLED TRIAL

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Background: Clinical guidelines recommend that physicians (MDs) address smoking at every visit using the 5As algorithm, but compliance is low. System-level interventions such as feedback and financial incentives are hypothesized to alter MD practice patterns, but whether they improve tobacco counseling is uncertain. Methods: A controlled study at 8 Boston-area primary care practices tested the effects of feedback and reimbursement on MDs’ delivery of 5As. MDs in a random one-half of practices received quarterly performance feedback about their rates of submitting a tobacco counseling/referral form. MDs in half of the practices were reimbursed fee-for-service for submitting these forms. Outcomes (often/always providing each 5A and submitting a counseling/referral form) were assessed by MD survey at baseline (n=114, 96% response) and 1 year (n=116, 95% response). We also counted counseling/referral forms received. Results: Both interventions produced a significantly greater change over time in the proportion of MDs who reported often/always submitting the tobacco counseling/referral form. The change (baseline-follow-up) was 9% to 26% for feedback vs. 14% to 17% for controls (difference: p=0.04), after adjustment for sex, graduation year, and years at the practice. For reimbursement, the corresponding change was 10% to 26% vs. 13% to 15% (p=0.05). The number of counseling/referral forms received increased in a pattern resembling MD self-reports. MDs’ self-reported increase in performing other 5As was not significantly different between intervention and control groups, partly due to high baseline rates. Conclusion: Both feedback and financial reimbursement improved MDs’ reported and observed rates of performing a targeted behavior: documenting tobacco counseling. A newly-completed patient survey will help determine whether the interventions changed MDs’ counseling behavior or simply their documentation. Nonetheless, system-level interventions appear to hold promise for improving the delivery of effective tobacco interventions in primary care settings.

The Robert Wood Johnson Foundation

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POS2-029  THE IMPACT OF A BRIEF TOBACCO CESSATION INTERVENTION IN PUBLIC HEALTH DENTAL CLINICS

Judith S. Gordon, PhD*, Judy A. Andrews, PhD, Edward Lichtenstein, PhD, and Herbert H. Severson, PhD

Background: Public health dental clinic patients use tobacco at disproportionately high rates. The purpose of this study was to evaluate a tobacco cessation program delivered via public health dental practitioners. Methods: Two community health center dental clinics participated in quasi-experimental design study. First, all tobacco-using patients in one clinic (n=178) received usual care. Next, all practitioners were trained to provide an enhanced version of the “5 As.” Subsequently, all tobacco-using patients in both clinics (n=190) received the intervention. All enrolled patients were at or below the federal poverty level. Follow-up assessments were conducted at 6 weeks, and 3 and 6 months post-enrollment. Results: Differences in self-reported quitting by condition were significant across all endpoints. Patients in the intervention condition were more likely to quit than those receiving usual care. Using logistic regression, we controlled for enrollment differences between control and intervention participants (age, race/ethnicity, time to first morning cigarette). Controlling for these variables, differences between groups were significant for quitting at 3 months (p<.05; Odds ratio = 4.85; 95% C. I. = 1.20, 19.60), and six months (p<.01; Odds ratio = 5.25; 95% C. I. = 1.35, 20.36). Receipt of intervention components varied by condition and explained the intervention effect. Conclusions: The results of our quasi-experimental study suggest the viability and effectiveness of delivering a tobacco intervention to low-income smokers via public dental practitioners. Clinical Implications: The potential reach of public dental practitioners is great. There are hundreds of federally funded community/neighborhood health centers and Indian Health Service clinics throughout the US that provide dental services.

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POS2-030  SMOKE|QUIT: A SELF-HELP SMOKING CESSATION PROGRAM FOR COLLEGE STUDENTS

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BACKGROUND: Although approximately 40% of college students smoke at least occasionally, there are few smoking cessation programs for this cohort. In response, we created Smoke|Quit, a two booklet self-help smoking cessation program based on stages of change and specifically addressing developmental issues of young adulthood. The Smoke booklet raises precontemplators’ awareness of issues such as the effects of cigarette production on the environment and smoking in the hospitality industry. The Quit booklet addresses misconceptions about light and mild cigarettes and offers techniques for quitting, relapse prevention and stress management. METHODS: To design Smoke|Quit, focus groups were run with 18 college smokers. Process evaluation was conducted with another group of college smokers who received either a traditional self-help program (n=104) or Smoke|Quit (n=89). Outcomes were assessed by telephone interviews with the same smokers three months after baseline. RESULTS: Precontemplators enjoyed the witty, non-judgmental language in Smoke, but regarded Quit as too focused on cessation. While those in preparation found both booklets appealing, Quit was especially well received for its straightforward portrayal of quitting and strategies to avoid relapse. Compared to smokers receiving the traditional program, those receiving Smoke|Quit read more and found the advice more helpful. More Smoke|Quit recipients judged the amount of text to be appropriate (73.4% vs. 58.7%), and fewer found the booklets too dull (5.1% vs. 14.0%). Finally, point prevalence abstinence rates at follow-up were 18.8% for Smoke|Quit and 5.4% for the traditional program. CONCLUSIONS: Smoke|Quit appeals to college smokers and effectively promotes smoking cessation.


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POS2-031  THE EFFICACY OF AN EXPERIENTIAL, THEORY-BASED INTERVENTION FOR COLLEGE STUDENT SMOKERS

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A substantial effort has been directed towards the development of primary prevention programs for adolescents and smoking cessation treatments for adults. However, little attention has been paid to secondary prevention interventions for the expanding college student population of smokers. The college years represent a “window of opportunity” to intervene with smokers before they progress to long-term dependence. The current study randomized 215 college student smokers across three interventions. The experimental intervention employed social psychological and experiential learning techniques. Participants engaged in a dissonance-enhancing, interactive, videotaped discussion on the short and long-term consequences of smoking. This intervention was compared to two control groups: a standard didactic smoking intervention in which participants viewed a smoking cessation video; and an experiential intervention on nutrition. We hypothesized that the experiential smoking intervention would be more effective than the control conditions in increasing motivation to quit smoking and reducing smoking behavior. Results confirmed that the experiential intervention was more effective at increasing readiness to quit (p < .001). Further, participants who received the experiential smoking intervention exhibited greater smoking knowledge and were more likely to avail themselves of additional smoking cessation information. Additionally, participants reported greater negative consequences of smoking and higher perceptions of overall smoking risk (ps < .05). One month follow-up data suggested that participants in both smoking interventions were more likely to quit smoking. These findings highlight the potential utility of an experiential intervention for college student smokers.

Fund by Cancer Research Foundation of America

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POS2-032  EFFECTIVENESS OF SELF-HELP SMOKING CESSATION INTERVENTIONS FOR COLLEGE SMOKERS: A RANDOMIZED CONTROLLED TRIAL

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BACKGROUND: National surveys suggest that one-third of college students smoke. A new self-help smoking cessation program, Smoke|Quit, was developed for this cohort. METHODS: To assess program effectiveness, 483 college smokers who voluntarily established a tobacco control initiative at one of six schools were randomly assigned to receive: One Step At A Time (Canadian Cancer’s Society’s gold standard self-help program for adults); Smoke|Quit; or usual care (a Quit Kit containing information on stress management and pharmacological aides, and novelty items). All participants received one proactive support call from a peer counsellor. Outcomes were assessed 3 months after baseline: 216 students completed the follow-up; 85 withdrew from the study; and 182 were unavailable because the school year ended before the follow-up was scheduled to occur. The final sample was representative of the initial sample on all demographic and smoking-related variables. RESULTS: Whether participants quit smoking depended on treatment condition (p < .05). Smoke|Quit produced more quitters (18.4%) than One Step At A Time (4.5%) or usual care (11.4%). Number of days smoke-free did not differ across treatments (M = 53.46), and all quitters reported greater self-efficacy at follow-up than baseline (p < .001). Among the 191 continuing smokers, treatment condition did not influence outcomes. Overall, 46.2% made a quit attempt, and number of cigarettes smoked weekly decreased from 54.01 to 40.50(p < .001). CONCLUSIONS: Specifically tailoring Smoke|Quit to psychosocial characteristics of college students and contextual issues of college smoking likely contributed to its greater effectiveness. We need to capitalize on the potentially final opportunity for age-targeted interventions represented by college.

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POS2-033
A UNIVERSITY COMMUNITY TOBACCO TREATMENT PROGRAM

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University communities are prime settings for on-site tobacco interventions, but little descriptive literature exists to guide program establishment and participant recruitment or to gauge outcome. University settings offer researchers unique opportunities to compare older, habitual tobacco-using employees against younger chip- pers and heavy student users on variables such as alcohol consumption, weight gain, and stress?both as tobacco use correlates and as treatment outcome predictors. We describe our ACT Now university treatment and research program. Our state tobacco settlement-funded program began January 2003 for students and expanded to faculty and staff in June. In 9 months, 228 students entered our intensive individual counseling and free medication program. Their 3-month point prevalence quit rate is 27% (intert to treat). In 3 months, 40 employees enrolled. Over half of each group (55% students, 54% employees) attended at least 4 sessions, satisfying our criteria for treatment completion. The 3-month quit rate for student completers is 41%. About 10% of student failures recycle. For the program, we solicited the administration's support, integrated with campus health services, used students as counselors to increase cost-effectiveness, and incorporated alcohol consumption considerations (timeline follow-back data) in providing treatment. In only 9 months of program operation, there is already evidence of a shift in referral sources from advertisements to friend's recommendations, indicating expanding program acceptance.

Funded by a grant from The Partnership for a Healthy Mississippi through the ACT Center at the University of Mississippi Medical Center.

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POS2-034
THE MEASUREMENT OF NICOTINE DEPENDENCE AMONG COLLEGE STUDENTS AND ITS EFFECT ON FUTURE SMOKING INTENTION

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In a recent survey, nearly half of college students reported using tobacco products within the past year, with 38% specifically reporting they had smoked cigarettes. In another study, cigarette smoking was regarded as an addiction, this pilot study was designed to gather data on nicotine dependence, as defined by the Fagerstrom Test of Nicotine Dependence (FTND), and future smoking intention, as defined by Ajzen's Theory of Planned Behavior. In 63 college student smokers (32 males and 31 females, aged 18-22 years), the mean age at smoking onset was 16 for both genders. The FTND, for females, 93% reported very low nicotine dependence (0-2), and 7% moderate dependence (3-4). None of the females reported nicotine addiction (5-10). For males, 77% reported very low dependence, 16% reported moderate dependence, and 7% nicotine addicted. Chi square analysis revealed that males and females did not differ significantly by FTND scores. With regard to future smoking intention, the FTND did not contribute significantly to smoking intention among college males or females. In conclusion, while cigarette smoking is regarded as an addiction, nicotine dependence, objectively measured by the FTND, was not found to contribute to future smoking intention in this sample of predominately very low nicotine dependent male and female college student smokers. These findings suggest the need for additional study to identify significant contributors of continued smoking behavior in college students who report low to moderate nicotine dependence, so that appropriate cessation programs can be developed. However, larger studies of this population are recommended.

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POS2-035
LOSS OF AUTONOMY OVER NICOTINE USE AMONG COLLEGE SOCIAL SMOKERS

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There is little information on the onset of nicotine addiction among young adult smokers, particularly social smokers. We administered an internet survey to undergraduate students at a large mid-western university. Despite lower response rates, internet surveys provide similar estimates of tobacco use among college students compared to mail and phone surveys. Loss of autonomy over nicotine use was determined using the 10-item Hooked on Nicotine Checklist (HONC), a validated measure among adolescent smokers. Social smoking was defined as sometimes-often-always smoking when friends smoked but rarely-never smoking when friends did not. The response rate to the survey was 27% (801/3000). 32% of students reported any smoking in the past month (mean=12.6 smoking days/month). 44% of smokers were social smokers (mean=10.4 smoking days/month). Current smokers reported an average of 2.9 (SD=3.2) HONC symptoms. 63% of all smokers and 65% of social smokers reported one or more HONC symptoms. A multivariate model identified monthly cigarette consumption, age, age of first use, number of recent quit attempts, and duration of recent abstinence as significant predictors of the HONC score. Smoking primarily in social situations did not moderate the number of HONC symptoms. The majority of college smokers, including social smokers, report some loss of autonomy over nicotine use. Interventions to reduce college smoking may benefit from addressing the development of nicotine addiction in this population.

Minnesota Partnership for Action Against Tobacco

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POS2-036
ASSESSMENT OF SMOKING MOTIVES AMONG COLLEGE SOCIAL SMOKERS

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Motives for smoking among young adult smokers, particularly social smokers, are not clear. We administered an internet survey to undergraduate students at a large mid-western university. Despite lower response rates, internet surveys provide similar estimates of tobacco use among college students compared to mail and phone surveys. The 18-item Smoking Motives Scale, validated among adolescent smokers, identifies Affect Management (i.e. smoke more when angry), Social Facilitation (i.e. feel more attractive when smoking), and Physical Dependence (i.e. crave morning cigarettes) smoking motives. Social smoking was defined as sometimes-often-always smoking when friends smoked but rarely-never smoking when friends did not. The response rate to the survey was 27% (801/3000). 32% of students reported any cigarette use in the past month (mean=12.6 smoking days/month). 44% of smokers were social smokers (mean=10.4 smoking days/month). Smokers endorsed more Affective Management motives (mean score=12.8+6.7) compared to Social Facilitation (mean score=9.3+4.1) or Physical Dependence (9.2+4.7) motives (AM- SF=5.3+5.8; p<0.001; AM-PD=3.6+4.7; p<0.001). This is true for social smokers and smokers not classified as social smokers. Social smokers endorsed more SF compared to PD motives (SF-PD=0.7+3.6), while the opposite was true for smokers not so classified (SF-PD=0.4+4.8, t-test for SF-PD social vs. not social, p<0.05). College smokers, including social smokers, report more Affect Management motives for smoking compared to either Social Facilitation or Physical Dependence motives. Interventions to reduce smoking among college students may benefit from addressing Affect Management motives.

Minnesota Partnership for Action Against Tobacco

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POS2-037  THE PROXIMAL ASSOCIATION BETWEEN SMOKING AND ALCOHOL USE AMONG COLLEGE FRESHMAN

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Background: Prospective and cross sectional research has widely confirmed the predictive value of both smoking and alcohol use in predicting initiation and escalation of the other. To date, however, the relationship between smoking and drinking has been investigated largely in terms of a more distal relationship between the two behaviors, either through long lapeses in prospective assessment or through the demonstration of general associations between recent behaviors. The association between concurrent changes in smoking and drinking behavior has been all but ignored in both quantitative and qualitative research. In fact, smoking and drinking behaviors are often engaged in simultaneously, creating possible causal links that are more proximal in nature. Methods: Nine hundred and twelve freshmen subjects at Purdue University were followed for 35 weeks. Each week, subjects were asked to provide a 7-day time-line follow-back account of daily use of cigarettes and alcohol. Results: Ninety four percent of the sample reported drinking at least one alcoholic drink during freshman year compared to 70% who reported smoking at least one cigarette. Smoking and alcohol use each showed a marked weekly pattern where highest levels of use for both substances were seen at week’s end (i.e. Thursdays, Fridays and Saturdays). Eighty four percent of the sample reported some simultaneous smoking and drinking behavior. Again this simultaneous substance use showed a weekly pattern in which less than 20% of smoking was done while drinking early in the week, compared to over 50% of the smoking that took place at week’s end. Notably, both the level and pattern of simultaneous use was similar for males and females. Discussion: In that many prevention initiatives attempt to tackle both smoking and drinking behaviors based on the strong association between the two, this study will be helpful in better defining their proximal relationship to one another during the first college year.

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POS2-038  PRELIMINARY EXAMINATION OF THE SUPPORT PROVIDED MEASURE IN A COLLEGE SAMPLE

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Most research investigating smoking-specific support has assessed the smokers perceptions of support-received by others and not the support-provided by concerned-others. A survey, conducted at 3 universities with a convenience sample of 1719 college students (mean age 19.9 years), included the following question: Is there some one close to you who you smoke cigarettes who you think should quit? 786 students (524 female; 481 never-smokers, 236 current-smokers, 69 other) responded affirmatively. Of these, 771 completed a Support Provided Measure (SPM), a self-report measure developed to assess the smoking-related interactions between a concerned other and a smoker. SPM total-scores were calculated by summing the 29 items. Total-scores ranged from 3-25. Item endorsement ranged from 6% to 95%. All but 5/29 items were positively-correlated with the total-scores. Spearman correlation coefficients ranged from -0.37 to 0.65. For the negatively-correlated items, nagging (r=0.37), hiding cigarettes (r=0.26), punishing the smoker for their smoking (r=0.25), and criticizing the smoker for the consequences of their smoking (r=0.24) were correlated with total-scores, indicating that concerned others may misperceive these items as supportive of smoking abstinence. Cronbachs alpha was 0.83. Principal components factor analysis (varimax rotation) yielded a 2-factor solution (64% total variance). Factor 1, smoker-items (eigenvalue=7.5), had 14 items, and Factor 2, self-items (eigenvalue=1.2), had 5 items, accounting for 73% and 11% of the variance, respectively. Preliminary results suggest that the Support Provided Measure is a reliable measure of the provision of smoking-specific support provided. Behaviors of concerned others could be targets of support person interventions for smoking cessation.

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POS2-039  USING TOBACCO INDUSTRY PSYCHOGRAPHIC MEASURES TO DESCRIBE COLLEGE SMOKERS AND NONSMOKERS

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Background: The tobacco industry has developed sophisticated marketing research questionnaires to gain insight into young adult smokers over the past 30 years. Their questions may also be useful to target tobacco control interventions for young adults. Methods: Philip Morris’s questionnaires assessing young adult “psychographics” (attitudes, self-descriptors, and goals) were located in online collections of previously secret tobacco industry documents. 28 items that distinguished Philip Morris’s young adult market segments were administered in an internet survey to undergraduate students at a large mid-western university. Cluster analysis was performed to describe naturally occurring segments of this population. Respondents were also classified into Philip Morris’s market segments based on their responses. Results: The overall response rate was 27% (801/3000): 95% of respondents completed the psychographic questionnaire. Most survey respondents matched the profile of the market segments that held more traditional self images and goals (i.e., those Philip Morris dubbed “50’s throwbacks,” “New Age Men,” or “90s traditionalists”). Few of the respondents matched the industry segments that were more materialistic and less achievement oriented (i.e. those dubbed “Macho Hedonists,” or “Uptown Girls” by the tobacco company). Conclusions: Young adults form distinct populations distinguished by their “psychographic” characteristics. College students participating in online interventions may have more traditional values and goals than other young adults. Psychographic profiles may assist with planning and tailoring prevention and cessation messages for young adults.

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POS2-040  WILL SMOKE-FREE ENVIRONMENTS IN RESTAURANTS AND BARS CHANGE COLLEGE STUDENTS’ PATRONAGE PATTERNS?

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Restaurant and bar owners fear that smoking restrictions will decrease business. To examine whether college students would change their patronage patterns if local bars offered non-smoking areas or if local restaurants banned smoking, we analyzed 1,716 usable surveys (87.4% response rate) gathered from a stratified sample of undergraduate classes at a four-year institution. Approximately 22% of respondents reported having left or not gone into a restaurant in the local area because of cigarette smoke, and 35% reported similar behaviors regarding local bars. If a few restaurants banned smoking, 44.1% reported they would be more likely to patronize those restaurants, 9.1% would be less likely, and 46.9% would not change. If a few bars offered non-smoking areas, 35.8% reported they would be more likely to patronize those bars, 7.3% would be less likely, and 56.9% would not change. In both cases, non-smokers (68.8% of students) were significantly more likely to provide a favorable response, even after controlling for demographic and other respondent characteristics. Although this study provides only indirect evidence, these data suggest that the establishment of policies that restrict smoking in local bars and restaurants will not adversely affect business and may actually increase business. These data may be used by colleges and universities to support the development of smoke-free environments in local establishments.

Funded by a grant from The Partnership for a Healthy Mississippi through the ACT Center at the University of Mississippi Medical Center.

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POS2-041  STUDENT SUPPORT FOR A UNIVERSITY POLICY PROHIBITING TOBACCO PRODUCT SALES ON A COLLEGE CAMPUS

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A recommended tobacco control policy for colleges and universities is campus prohibition of tobacco product sales. To assess student awareness of tobacco product sales on campus and student support for a university policy prohibiting sales, we analyzed 1,716 usable surveys (87.4% response rate) gathered from a stratified sample of undergraduate classes at a four-year institution. Over two-thirds (70.6%) of the respondents reported awareness that cigarettes could be purchased on campus, and 56.8% expressed support for a policy prohibiting campus sale of tobacco products. Approximately 31% of respondents were classified as current (past 30-day) smokers. As expected, non-smokers were more likely to express support for a policy (65.7% vs. 37.1%; p<0.0005). In multivariate analysis, students more likely to support a policy included: those with higher grade point averages, those unaware of campus sales, intercollegiate athletes, and non-smokers. Alcohol consumption status, gender, Greek status, and year in school were not significant predictors in the multivariate model. While support for other tobacco control policies may be stronger (e.g., the existing indoor smoking ban), student support for prohibiting tobacco sales on this campus is mixed. College campus health personnel should assess the level of support for tobacco control policies, determine factors influencing students’ beliefs, and possibly engage in public relations efforts before approaching university administrators about implementing policies.

Funded by a grant from The Partnership for a Healthy Mississippi through the ACT Center at the University of Mississippi Medical Center.

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POS2-042  PRELIMINARY DATA FROM ASSESSMENT TOWARD TOBACCO ECONOMICAL AND MEDICAL PROSPECTIVE TRIAL (ATTEMPT) - A GLOBAL LONGITUDINAL COHORT STUDY OF THE NATURAL HISTORY OF QUIT ATTEMPTS

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OBJECTIVE: This global longitudinal cohort study examines the natural course of successive attempts to quit smoking and the impact of attempts on health and economic outcomes. Data are collected from members of a consumer panel using surveys administered via the Internet every 3 months for several years. METHODS: In 1 month, 95,183 individuals in the US, Canada, France, and the UK were invited by e mail to participate in this study. The first 2,009 respondents who met the inclusion criteria (at least 5 cigarettes per day, age 35-65 years, personal access to the Internet, and weight <135 kg) were enrolled. At inclusion, 82% of enrolled subjects in the US agreed to participate in a random, 1-time in-home assessment. RESULTS: Across countries, participants were similar with respect to age (mean, 47.9 years), gender (46% female), marital status, employment status, level of income, and educational level. At baseline, dependence to nicotine (FTND) and quality-of-life (EQ5D) scores were 5.2 and 0.75, respectively, which were comparable to the general smoker population. At baseline, the median daily smoking consumption was 10-19 cigarettes, with a mean 31 year history of smoking and a previous history of 4 quit attempts. CONCLUSIONS: The Internet is a convenient tool to recruit a representative cohort of smokers. Follow-up data generated from ATTEMPT will evaluate the short- and long-term health and economic benefits of smoking cessation.

This study was conducted by RTI and Sanofi-Synthelabo Recherche.

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POS2-043  SMOKER PREFERENCE FOR ELASTIC CIGARETTES IN THE CANADIAN CIGARETTE MARKET

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Elastic cigarettes are characterized by yields of constituents that increase proportionally faster than smoke volume as cigarettes are smoked more intensely. Elasticity may function to overcome physical limitations in increasing puff volume during nicotine-seeking behaviour. The purpose of this study was to determine if there were elastic cigarettes in the Canadian cigarette market, and to determine smoker preference for elastic cigarettes. Elasticity was calculated for 115 brands in the Canadian filtered cigarette market for puff volumes of 44 and 56 ml. Puff volumes, nicotine and tar deliveries were obtained from earlier published documents. Sales data was used to as a proxy for smoker preference. Ordinary least squares regression was used to determine the association of sales and elasticity in the Canadian cigarette market. To control for effects of branding, advertising, distribution, and yield, only brand pairs (eg. Player’s Light Regular Filter and Player’s Light Kingsize filter) were selected from the 115 brands. The cigarette brands ranged from a mean elasticity value of 1.21 to 0.67. Of the 115 Canadian cigarette brands tested, 23 brands had a mean elasticity value significantly over 1.00, making them elastic. While Japan Tobacco International and Rothmans Benson and Hedges had elastic brands (4/25, 6/50), proportionately more Imperial Tobacco Limited brands were elastic (13/40). After adjusting for brand, the average elastic cigarette sold an average of 308 million cigarettes while an inelastic cigarette sold 83 million cigarettes (p<0.0001). The difference in sales between elastic and inelastic cigarettes was independent of tar yield and filter type. There are elastic cigarettes in the Canadian cigarette market and the results suggest a clear smoker preference for elastic cigarettes. Utilizing elasticity may be valuable to future harm reduction strategies.

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POS2-044  A NOVEL LAPSE-RESPONSIVE MODEL OF SMOKING CESSATION TREATMENT

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In smokers attempting to quit, a lapse during the first two weeks of a quit attempt is strongly associated with relapse, with 90% of those who lapse in this period progressing to relapse, compared to 50% of those who do not lapse during this time. In an effort to increase the success rate of early lapsers, a novel lapse-responsive treatment model was developed. Smokers called in to an automated phone system daily for two weeks after quit day to report on smoking lapses. All subjects received usual care, consisting of Zyban and brief counseling. Smokers who reported a lapse during the first two weeks were assigned to an immediate smoking cessation treatment (rapid smoking, RS, N=11) or the control condition (usual care, UC, N=12). Rapid smoking consisted of three daily sessions during which subjects smoked 9 cigarettes, inhaling every 6 seconds, with a 5 min break scheduled after every third cigarette. Follow-up visits were scheduled at weeks 1, 2, 4, 8, 12, and 24 after quit day. Primary outcome was latency to smoke again (re-lapse) after the initial reported lapse. Compliance was good with 72% of subjects calling in at least 10 of the 14 scheduled days. Rapid smoking delayed but did not prevent relapse (RS: 7.1±2.2 days UC: 1.6±0.7). Findings show that early lapsers can be identified using the automated phone system and that immediate intervention can impact the lapse-relapse process. Because rapid smoking has low acceptability with both subjects and providers, alternative treatments are currently being tested in this lapse-responsive model.

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Spiral CT scanning for lung cancer has received much attention lately. It offers the potential to identify and treat cancer at an earlier stage, thereby reducing morbidity and mortality. Four papers have examined the cost effectiveness of Spiral CT screening with mixed results; however, none considered providing smoking cessation treatment at the time of screening. This study examines the cost effectiveness of cessation treatment at the time of screening. The base model assumes an initial cohort of 100,000 heavy smokers (20+ pack years) who undergo annual spiral CT beginning at age 60. Key assumptions regarding CT screening are drawn from the least favorable cost effectiveness paper. Smokers are offered intensive treatment post-scan in Year 1: brief advice from a physician, 5 sessions of counseling (3 with nurse, 2 with Psychologist), and 8-weeks of nicotine patch therapy. 50% of smokers enroll in cessation treatment and intensive treatment yields an incremental quit rate of 17% over a natural quit rate of 3%. Results indicate that the cost/QALY gained for intensive smoking treatment is $2,610. The addition of smoking treatment improves the cost effectiveness of spiral CT from $116,000/QALY to $41,400/QALY. Sensitivity analyses show that intensive treatment remains cost-effective under more conservative assumptions of quit rates and treatment utilization. However, the relative cost-effectiveness of CT screening linked with counseling depends on key assumptions. Other models of smoking treatment will be presented.

National Cancer Institute & The Robert Wood Johnson Foundation

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The Gambling Task is a complex neuropsychological test (in the form of a card game) that examines the ability of individuals to assess potential immediate gains over long-term losses. Gambling Task performance has been examined in previous studies with individuals who are dependent on alcohol, cocaine, heroin, and amphetamine. These studies have shown that those who are dependent on the aforementioned substances perform more poorly on the Gambling Task than controls. Specifically, in relation to controls, drug/alcohol dependent individuals show impairment by tending to pick more cards that have large immediate gains and very large delayed punishers. The delayed punisher is larger than the immediate gain, so there is a net loss in play money. Individuals who are not dependent on substances tend to choose cards that yield small immediate gains and very small delayed punishers. The delayed punisher is smaller than the immediate gain, so there is a net increase in play money. In order to test the hypothesis that heavy smokers display the same pattern of decision-making, the Gambling Task was administered to a sample of 40 participants (23 heavy smokers and 17 never-smokers). Results indicated that heavy smokers performed more poorly on the Gambling Task than non-smoking controls. Specifically, heavy smokers chose more cards from the decks with large delayed punishers than did the control group.

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**POS2-049**

**CLEARING THE SMOKE: A COMPUTER SIMULATION OF THE POPULATION HEALTH IMPACTS OF REDUCING NICOTINE IN CIGARETTES.**

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Context: The American Medical Association (AMA) has advocated the gradual reduction of the nicotine content of cigarettes, thereby reducing their addictive potential and decreasing the number of people who smoke. However, smokers may “compensate” for the loss of nicotine by smoking more cigarettes or inhaling more deeply. Further, a black market may emerge. Thus, it is unclear whether a federal mandate would result in a net increase or decrease in population health. Objective: To estimate the health gains or losses that are likely to accrue to the US population over the long-term if the nicotine content of cigarettes is gradually reduced to trace levels over a period of six years. Methods: To estimate health impacts, we created the Tobacco Policy Model, a system dynamics computer simulation model. The model simulates the US population as it ages and as individuals change their smoking behavior over time. Secondary data for model parameters were obtained from publicly available sources. Population health impacts were measured as the prevalence of smoking and the change in cumulative quality-adjusted life-years (QALYs) to the US population over a 50-year period. Results: Absent any policy change, smoking prevalence is likely to be 23 percent in 50 years. With a mandate to reduce nicotine we estimate that smoking prevalence will decline to 5 percent of the population. As a result, over a 50-year period the cumulative gain of 157 million QALYs is expected. Conclusions: Despite any mortality implications due to compensatory smoking or emergence of a black market, a federal mandate requiring the reduction of nicotine in cigarettes would likely prevent the addiction of scores of new smokers and result in important gains to the nation’s health. This research should prove useful to Congress as they contemplate giving the FDA the authority to regulate tobacco.

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**POS2-050**

**DO SMOKERS WANT TO KNOW MORE ABOUT THE CIGARETTES THEY SMOKE? RESULTS FROM THE EDUCATE STUDY**

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OBJECTIVES: To assess smokers’ receptivity to receiving information about the product features of their cigarette brand, test whether the use of tailored, brand-specific information impacted on participants’ attention to the information, and test whether attention to the tailored information impacted on participants’ beliefs about the product features and smoking behavior. METHODS: 982 adult callers (18+ years) to the New York State Smoker’s Outreach between February and April, 2003 were randomized into one of three intervention arms: Group 1 (control) received only standard counseling and materials; Group 2 received the standard counseling and materials plus information about specific cigarette characteristics (i.e. filters, low tar, menthol, additives, nicotine); and Group 3 received the same materials as Group 2 with the cover tailored to their particular brand and type of cigarette. Participants were called back six weeks later to assess their beliefs of cigarette design features and current tobacco use. RESULTS: All smokers who called the Quitline were receptive to receiving information about their cigarette brand. Sixty percent who received the tailored product information brochure recalled receiving it versus 50% who received the identical guide with the non-tailored cover. Recall of the material discussed in the brochure was slightly higher among subjects who received the brochure with the cover tailored to their cigarette brand versus those who received the basic cover. Respondents who reported reading some or all of the brochure demonstrated significantly greater awareness regarding low tar, filter and no-additive cigarettes. CONCLUSION: Study results show that smokers are receptive to receiving information about their cigarette brand, but that either persistent efforts or more potent interventions to personalize the information are needed to ensure that they recall information about the cigarette brand that they smoke.

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**POS2-051**

**SCIENCE BASE FOR REGULATING TOBACCO ADDICTION LIABILITY**

Jack E. Henningfield*, Mitch Zeller

It is increasingly accepted that tobacco product toxicity could be regulated. Could addictiveness also be regulated? The tobacco industry has made its products more toxic than need be, and has designed products to increase their addictiveness as a means of increasing market size and share. It refers to such efforts as increasing consumer “satisfaction” and product “acceptability.” However, industry documents and recent research have revealed the use of many technologies to increase product addiction potential. These include using ammonia compounds to increase nicotine extraction and absorption, acetaldehyde precursors to produce synergistic reinforcing effects with nicotine, menthol and propylene glycol to increase the ease of nicotine inhalation, and particle physics technology to enhance deep lung deposition of nicotine-laden smoke. These ingredients and product design characteristics did not make cigarettes addictive. Early cigarettes were undoubtedly addictive and toxic – but they were unacceptable and unsmokable by many who tried them. Modern cigarettes have evolved into chemical cocktails designed to facilitate the development and maintenance of nicotine addiction. Similarly, smokeless tobacco products are designed to provide relatively slow onset low dose products for tobacco naive persons, and high dose products that are difficult for treatment to compete with. There are ample precedents from food and drug regulation for regulating toxins and addictiveness. An empowered regulatory authority could require tobacco companies to justify all ingredients and designs suspected of increasing addictiveness as is presently required of nicotine replacement products. Such an agency should be empowered to restrict unsubstantiated claims of reduced addictiveness and toxins because such claims could undermine tobacco use prevention and treatment even if the products were somewhat less addictive and toxic.

Pinney Associates and The Robert Wood Johnson Foundation Innovators Awards Program at Johns Hopkins

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**POS2-052**

**TOBACCO INDUSTRY DOCUMENTS AS A ROAD-MAP FOR EXPLORING THE NEUROBIOLOGY OF TOBACCO DEPENDENCE**

Geoffrey Ferris Wayne* Gregory N. Connolly Jack E. Henningfield

The recent availability of internal tobacco industry documents provides a significant resource for evaluating industry understanding of the pharmacological, psychosocial, and behavioral mechanisms underlying tobacco dependence. In this preliminary study, we catalog the range of efforts undertaken by tobacco manufacturers seeking knowledge of these mechanisms. Some areas of industry research, such as cellular and molecular studies of nicotine and its effects, are widely available in the open literature. Of greater interest are internal research projects that have demonstrated direct influence on product development. These include studies of smoker psychology and behavior, evoked-response studies of tobacco-delivered nicotine, the effects of sensory perception, dose related effects, and the development of nicotine analogs and synergists. Findings suggest extensive industry knowledge of mechanisms that determine smoker perception and behavior. Findings further suggest that elements of product design, such as additives and sensory components, may alter uptake of nicotine as well as measures of response. Independent research has recently begun to consider the contributions of tobacco product ingredients and design factors to the determination of risk, severity, and prevalence of addiction. However, the application of these findings to cessation and treatment efforts is still quite limited. We conclude that clinical research would greatly benefit from further examination of the decades of knowledge accumulated by tobacco manufacturers.

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POS2-055 ▶ DETECTION OF TRACE METALS IN HUMAN HAIR USING LASER ABLATION INDUCTIVELY COUPLED PLASMA SPECTROMETRY (LA-ICP-MS)

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Throughout the history of hair research, there have been several techniques used to quantify the metal concentration in this complex biological matrix. Many of these techniques included the use of the Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES) and Quadrupole Inductively Coupled Plasma Mass Spectrometry (Q-ICP-MS). Recently, advances in laser ablation technology have allowed for the development of new analytical methods which reduce sample preparation and provide fine-scale highly accurate spatial and temporal exposure data. LA-ICP-MS gives researchers more versatility in processing and analyzing hair samples. Whether using hair pellets or individual strands, LA-ICP-MS results provide the same accuracy and precision as solution-based ICP-MS methods. LA-ICP-MS involves less time in analysis and paves the way for future laser ablation methods on other solid biological samples. We used LA-ICP-MS to measure trace elements concentrations in hair of children exposed to environmental tobacco smoke, some of whom have been diagnosed with Monica Wilson’s Disease, Menkes’ Disease, and asthma. We compared the hair metal content to blood and urine composition. Our results indicate that LA-ICP-MS can be the most cost effective method for monitoring exposure and assessing body burden.

This research was carried on while the first author was attending Arkansas State University. The research was funded by the Arkansas Bioscience Institute Grant.

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POS2-056 ▶ A METHOD FOR QUANTIFYING FREE-BASE NICOTINE IN MAINSTREAM CIGARETTE SMOKE

Clifford H. Watson, Ph.D.*, and David L. Ashley, Ph.D. Centers for Disease Control and Prevention

The bioavailability of nicotine significantly influences its addictive properties; therefore, it is important to examine the key properties of tobacco products that influence the protonation state of mainstream smoke nicotine. Most previous studies have not differentiated between nicotine in its protonated or deprotonated free-base form. Rather than simply determining total nicotine, our method directly measured the amount of free-base nicotine, which is its most bio-available form. We developed a method to determine the amount of free-base nicotine associated with mainstream cigarette smoke using solid-phase micro-extraction (SPME) combined with gas chromatography/mass spectrometry (GC/MS). The mainstream cigarette smoke particulate, generated using a standardized smoking machine protocol was trapped using a standard cambridge filter pad (CFP). Analysis of vapor in the headspace above the CFP was quantitatively analyzed for free-base nicotine from 26 brands of cigarettes having a wide range of tar and nicotine deliveries as measured under Federal Trade Commission (FTC) smoking conditions. In the mainstream smoke of cigarettes, the amount of free-base nicotine ranged from 0.03 to 0.14 mg/cigarette. This approach also established a new means to investigate how nicotine delivery is influenced by a variety of factors including physical properties, chemical additives, and smoking regimens. This work underscores the importance on nicotine delivery by a combination of factors such as the tobacco filler nicotine content, filter ventilation, and certain acidic or basic additives, and emphasizes that nicotine delivery is not adequately represented by the amount of total nicotine.

U.S. Federal Government

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POS2-054 ▶ SPECIFICATION OF METALS IN TOBACCO SMOKE USING GC-ICP-MS

Mai Elobeid, Jon Russ, Ph.D., Arkansas State University and Fred R. Hiligeman, Ph.D., Southwestern University

The chemical speciation analysis of lead, cadmium and tin in mainstream tobacco smoke particulate matter has been undertaken using a gas chromatography (GC) system interfaced with an inductively coupled mass spectrometer (ICP-MS). Mainstream particulate matter was collected on Whatman PVA bound glass fiber pads using a CH Technologies Model 625A/SG-100 single smoke generator. For each pad, 5 individual 2R4F Reference Cigarettes were smoked following the Federal Trade Commission parameters. After smoking, the pads were immersed in water (or methanol) and shaken for 6 hours to extract the metals into an aqueous solution (or MeOH). Because the GC system requires that analytes be in a volatile form, we derivatized the metals in situ using sodium tetra(n-propyl)borate to produce the metal ethyl derivatives. The resulting organometallic compounds were then injected directly into the GC (Perkin-Elmer Clarius 500) for separation, using a 30 m (2.0 mm id) fused silica column with a temperature ramp from 40 to 220 degrees Celsius. The GC effluent was mixed with argon at the heated interface and carried into the ICP-MS (Perkin-Elmer ELAN DRC II) for detection of the metals.

The research was funded by the Arkansas Bioscience Institute administered by Arkansas State University.

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POS2-053 ▶ DESIGNING CIGARETTES FOR WOMEN: AN EXAMINATION OF INDUSTRY DOCUMENTS

“Carrie M Carpenter, MTCP Geoffrey Ferris Wayne, MTCP Gregory Connolly, MTCP Anne Landman, ALA-Colorado

The tobacco industry has used a variety of marketing strategies to promote tobacco use among specific market segments, including women. However, research on the effects of cigarette design features that have been used to appeal to this population remains limited. In this study, we examine internal tobacco industry documents for evidence that tobacco manufacturers have intentionally modified product design for promotion among women. Altered design elements include product shape (circumference and length), flavor, packaging, blend, and tar and nicotine deliveries. We will address the role of cigarette design in the overall marketing of women-targeted cigarettes and the extent to which tobacco companies have used product design to target women. Further, we will discuss the product design features that most appeal to women smokers and the impact of product changes on smoking behavior and patterns of smoke delivery and intake. Finally, we will assess whether these product design changes are intended to mislead women or affect their beliefs about the health risks of smoking. This information has important implications for effective prevention and cessation efforts as well as the development of policy and regulations addressing smoking-related health risks among women.

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POS2-057
DO NON-U.S. CIGARETTES DELIVER THE SAME NICOTINE DOES AS U.S. CIGARETTES?

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Smoke constituent exposure from U.S.-made cigarettes may differ from that from cigarettes made in developing countries. Smoke constituent exposure is relevant to nicotine dependence level and tobacco-associated morbidity/mortality. The primary aim of this study was to determine if, relative to U.S. brands, two non-U.S. cigarette brands produced differing constituent exposure in smokers. Thirty overnight-abstinence smokers completed three randomly-ordered smoking periods separated by 90 minutes (preliminary data from 12 smokers are summarized below). Smoking periods consisted of 10, 40-ml puffs, with a 30 second interpuff interval. All participants smoked the same two U.S. cigarette brands: Marlboro (FTC Tar = 15 mg, Nicotine = 1.1 mg, CO = 14 mg) and Marlboro Ultra Light (FTC Tar = 6 mg, Nicotine = 0.5 mg, CO = 7 mg) while half smoked one Syrian brand (Alhamra) and half another (Al Sham; Syrian brands are not marketed as “full flavor,” “light,” etc.). Plasma nicotine and expired carbon monoxide (CO) were assessed before and after smoking. Marlboro increased plasma nicotine level and CO significantly (mean post-pre difference = 8.7 ng/ml nicotine; 4.6 ppm CO) relative to the Marlboro Ultra Light (3.2 ng/ml nicotine; 1.8 ppm CO). AlHamraa was similar to Marlboro (4.9 ng/ml nicotine; 3.8 ppm CO), while Al Sham was not (2.5 ng/ml nicotine; 2.2 ppm CO). These results suggest that, when puff topography is held constant, U.S. and Syrian smokers may receive similar nicotine and CO exposure. Laboratory methods can be valuable for comparing the smoke constituent exposure and cardiovascular and subjective effects of different cigarettes and cigarette brands.

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POS2-059
HIGH CONCENTRATIONS OF SALIVA COTININE IN SWEDISH ADOLESCENT SNUS USERS

Ann Post*, Maria Rosaria Galanti, Hans Gilljam

In Sweden, the pattern of tobacco use is rapidly changing. Snus (oral moist snuff) is now the predominant tobacco product among men, and in men under the age of 40, daily snus use is twice as prevalent as regular cigarette smoking. Hence, the trajectories of tobacco uptake and use in Sweden warrant study. In an ongoing longitudinal study a representative sample of 520 adolescents at age 15 were subjected to a saliva cotinine test. Information about tobacco use was obtained by self-report. Cotinine samples of adolescents denying any tobacco use or denying use within the previous month or week proved to be 98-99% accurate depending on the question asked. A total of 130 subjects reported tobacco use within the last 7 days. One hundred (19.2% of original sample) had positive cotinine levels (range 2.3-514.0 ng/ml) whereas 30 had levels below the limit of detection (2 ng/ml). Among the 130 subjects reporting recent use 75 (57.7%) were “pure” snus users and 29 (22.3%) were “pure” snus users and 26 (20.0%) used both products (mixers). Snusers had a median cotinine concentration of 19.6 ng/ml (range 2.0-218.4), and snus users 53.7 ng/ml (range 2.0-514.0), while the mixers had a median concentration of 90 ng/ml (range 2.0-445.7) (p<0.001, compared to the smokers). The high concentration of cotinine found in most snus users, and in mixers in particular, could not be explained by the number of units (pinches) consumed on a regular basis, nor by more recent use. The long-term effects of this emerging addictive behavior are of concern, and warrant further studies.

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POS2-060
ESTIMATION OF THE SENSITIVITY OF CARBON MONOXIDE AND SERUM CONTININE AMONG AFRICAN AMERICAN LIGHT SMOKERS


The specificity of expired air carbon monoxide (CO) and serum cotinine (COT) as markers for the biochemical verification of smoking status is well known, however the sensitivity of these tests is unknown for light smokers (less than or equal to 10 CPD). The purpose of this study was to estimate the sensitivity of CO and COT among African American (AA) light smokers enrolled in a smoking cessation clinical trial. Serum COT [mean=234.3, SD=138.7] and expired air CO [mean=13.7, SD=9.2] were collected at baseline from 190 African Americans who self-identified as light smokers [mean age=43.8 (SD=9.4), 67% female, less than or equal to 45% completed HS]. Smoking status was assessed through self-reported average number of cigarettes smoked per day (CPD) during the past 30 days [mean=7.4, SD=2.5,]. A significant positive association was found between CO, COT and CPD. A higher correlation was found between CPD and COT (rs=0.36, p<.001) than CPD and CO (rs=0.24, p<0.001). Additionally, a cutoff of >20ng/ml for COT and >10 ppm for CO was used to determine the percentage of participants correctly classified as smokers. COT correctly classified 98% as smokers, while CO correctly classified only 95% as smokers. Of those incorrectly classified as nonsmokers by the CO criterion, 40% smoked greater or equal to 8 CPD. CO incorrectly classified only 3 smokers, 1 of whom smoked per day (CPD) during the past 30 days [mean=7.4, SD=2.5]. A significant positive association was found between CO, COT and CPD. A higher correlation was found between CPD and COT (rs=0.36, p<.001) than CPD and CO (rs=0.24, p<0.001). Additionally, a cutoff of >20ng/ml for COT and >10 ppm for CO was used to determine the percentage of participants correctly classified as smokers. COT correctly classified 98% as smokers, while CO correctly classified only 95% as smokers. Of those incorrectly classified as nonsmokers by the CO criterion, 40% smoked greater or equal to 8 CPD. CO incorrectly classified only 3 smokers, 1 of whom smoked greater or equal to 8 CPD. Serum COT has higher sensitivity for classifying AA light smokers compared to expired air CO. CO alone may not be an adequate biological marker of smoking status among AA light smokers.

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POS2-058
A LIMITED-SAMPLING STRATEGY FOR ESTIMATION OF NICOTINE PLASMA AREA UNDER THE CONCENTRATION VERSUS TIME CURVE AFTER ORAL NICOTINE


The primary objective of this investigation was to develop a limited sampling strategy for the prediction of nicotine AUC from plasma samples. The goal was to determine whether samples taken at one or two time points could substitute for a complete area under the curve from time 0 to 360 minutes (AUC360) determined from a single sample predictor is the 180-minute sample and the best pair of predictors is based on adjustments for the nominal half-life. The latter pair of samplers taken at one or two time points could substitute for a complete area under the curve from time 0 to 360 minutes (AUC360) determined from a single sample predictor is the 180-minute sample and the best pair of predictors is based on adjustments for the clearance of baseline nicotine, assuming nominal nicotine values of 60, 120, 180 and 240 minutes. Results showed that the best single sample predictor is the 180-minute sample and the best pair of predictors is the 90 and 270-minute samples (r=96.6% and r=99.6%, respectively); these are best both with and without adjustment for the nominal half-life. The latter pair of samples also predict cotinine AUC360 well (r=99.79%). The resulting equations are not simply trapezoidal-rule AUCs through the samples; instead, they give these points weights that account for their correlation with samples that need not be collected.

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POS2-062

SMOKING TOPOGRAPHY AS A PREDICTOR OF EXPONENTIAL CARBON MONOXIDE BOOST

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In cigarette smoking research, measurement of alveolar carbon monoxide (CO) is often used as a non-invasive correlate of carboxyhemoglobin level, as a biochemical verification of smoking status, and as a way to assess amount of smoke exposure. In addition, CO is a toxic compound. Smoke exposure may be influenced by how a person smokes, including such smoking topography measures as number of puffs, puff volume, puff duration and puff velocity. The current study was designed to better understand the relationship between smoking topography variables and CO boost.

Fifty treatment-seeking smokers smoked one of their preferred brand of cigarette through a Clinical Research Support System (CRess) smoking topography device. Participants provided breath CO samples prior to and following smoking, the difference of which was defined as CO boost. Predictors variables included number of puffs, puff volume, time between puffs, puff duration, mean puff velocity and mean maximum puff velocity. While controlling for time since last cigarette, mean puff velocity (β= 0.15, p<0.02) and mean maximum puff velocity (β= 0.09, p<0.01) were the only significant predictors of CO boost. Analyses indicate no significant association of CO boost with cigarette characteristics (cigarette size, menthol versus non-menthol, light versus regular), smoking history (years smoking, cigarettes per day, time since last cigarette) or demographic variables (age, sex, race). These results suggest that those smokers who take high velocity puffs may increase their exposure to toxic compounds found in cigarette smoke.

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POS2-063

BIOMARKER RESPONSE TO SIDESTREAM SMOKE EXPOSURE AMONG NONSMOKERS IN AN ENVIRONMENTAL CHAMBER.


Certain questions concerning the response of nonsmokers to exposure to environmental tobacco smoke can only be fully evaluated in controlled exposure studies. We have examined biomarker responses in a group of nonsmokers exposed to cigarette smoke under controlled conditions in an environmental chamber. Following baseline measurements, subjects were exposed to sidestream smoke for a period of four hours (mean CO = 8.5 ppm, air nicotine = 149 ug/m3, air exchange rate = 0.73/h). Saliva samples were self-collected every 30 minutes during the exposure. The geometric mean increase in salivary cotinine during the first 30 min was 0.385 ng/mL. Our preliminary results indicate that salivary cotinine increased in an essentially linear manner throughout the four hour exposure interval with an estimated mean increase of ca. 8.47 pg/mL of salivary cotinine per 100 ug/m3 of nicotine per min of exposure (n = 22). Two hours following the exposures, the increment in geometric mean salivary cotinine concentration over baseline was 3.22 ng/mL; in serum it was 3.30 ng/mL. Men and women had similar response rates to these controlled exposures in our preliminary evaluations, as did African-American and white subjects. Exposures were conducted using one of two brands of cigarettes (menthol or non-menthol), and again, no significant difference in response rates or in the overall cotinine response as a function of cigarette type was seen. However, data analyses in this study are continuing, and the final results will be presented.

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POS2-064

INFLUENCE OF GENDER ON DELIVERED TOXINS FROM CIGARETTE SMOKE AND METABOLISM

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Epidemiological studies, as well as the Surgeon General’s Report on Women and Smoking, have emphasized that women have a higher lung cancer risk than men. This could be due to differences in inhaled doses of toxins and/or in metabolism. We compared uptake and metabolism of various toxins in women versus men among 259 smokers. Delivered doses of benzo[a]pyrene (BaP), 4-(methyltrichloroamino)-1-(3-pyridyl)-1-butane (NNK) and nicotine from mainstream smoke were quantified by analyzing total particulate matter obtained by machine smoking under conditions identical to each person's smoking topography. The urinary metabolites 1-hydroxy-1-(4-OP)-4-(methyltrichloroamino)-1-(3-pyridyl)-1-butanol (NNAL), and cotinine were quantified for each subject. The results (mean plus or minus S.E.), adjusted for BMI and to urinary creatinine are: daily nicotine uptake by women versus men were 1.39 plus or minus 0.11 (n=118) versus 1.67 plus or minus 0.11 mg/BMI (n=119), p=0.07, respectively. Urinary cotinine after adjusting for delivered nicotine dose and race was 5.41 plus or minus 0.31 for women and 3.33 plus or minus 0.31 ng/mg/BMI for men, p=0.0001. Similarly daily delivered NNK in women versus men was 0.114 plus or minus 0.011 (n=102) versus 0.150 plus or minus 0.015 mg/BMI (n=103), p=0.03; urinary NNAL adjusted for NNK dose and race was 0.050 plus or minus 0.005 for women and 0.072 plus or minus 0.005 pmol/microgram/BMI for men, p=0.0007. Daily uptake of BaP in women versus men was 0.0122 plus or minus 0.0012 (n=67) versus 0.0163 plus or minus 0.0014 microgram/BMI (n=71), p=0.03 and excreted 1-OPH when adjusted to delivered BaP dose and race was 79.2 plus or minus 12.4 in women and was 62.5 plus or minus 11 ng/microgram/BMI in men, p=0.33. Although delivered doses of carcinogens is less for women than for men the metabolism is significantly higher in women after adjusting to the dose. Supported by USPHS grants CA-68384 and CA-17613.

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POS2-065  EFFECTS OF GENDER AND ORAL CONTRACEPTIVES ON NICOTINE METABOLISM

Neal L. Benowitz, MD,* Gary E. Swan, PhD, Christina N. Lessov, PhD, Peyton Jacob, III, PhD  

Pregnancy accelerates the metabolism of nicotine and cotinine, suggesting that sex hormones modulate the activity of the nicotine metabolizing enzyme CYP2A6. As part of a twin study of the genetics of nicotine metabolism, we addressed the hypothesis that nicotine metabolism is faster in women compared to men, and is accelerated further by oral contraceptiv (OC) use, 290 subjects received IV infusions of deuterium-labeled nicotine and cotinine, with blood sampling to determine disposition kinetics. Women taking OC had faster clearance of nicotine and cotinine and faster clearance of nicotine via the cotinine pathway (an indicator of CYP2A6 activity), compared to women not taking OC and compared to men. Data for women taking OC (N=46), women not taking OC (N=158) and men (N=88) were respectively: C_l-nic (ml/min/kg) 23.0 ± 6.3 vs 17.7 ± 6.2† vs 15.6 ± 4.3; C_l-cot, 0.97 ± 0.37* vs 0.73 ± 0.41 vs 0.58 ± 0.02; CL-nic/cot 17.0 ± 6.5 vs 13.8 ± 6.1† vs 11.8 ± 4.3 (“different than women no OC and men; †different than men; both p<0.05). These findings indicate that female sex hormones accelerate the metabolism of nicotine and cotinine, primarily by inducing CYP2A6 activity. Nicotine clearance is substantially higher in women than in men using OC. Nicotine metabolism among OC users might result in greater cigarette consumption and a greater increase in tobacco smoke toxin exposure compared to women who do not use OCs.  

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POS2-066  CHRONIC NICOTINE AND PHENOBARBITAL ALTER EXPRESSION OF DRUG METABOLIZING ENZYMES IN MONKEY

Anna M. Lee*, Kerri A. Schoedel, University of Toronto; Sharon Mikesy, Ph.D., CamHD; and Rachel F. Tyndale, Ph.D., CAMH and University of Toronto  

Nicotine is used for treatment of smoking and neurological diseases such as Alzheimers disease. CYP2E1 inactivates ethanol and CYP2A6 inactivates nicotine. Smokers have a higher rate of alcohol metabolism and lower nicotine metabolism. We have found that nicotine increases CYP2E1 in rat liver. CYP2B6 activates bupropion and CYP2D6 inactivates antidepressants. It is unknown whether nicotine regulates CYP2B6 or CYP2D6 in liver. Monkeys were treated for 22 days with nicotine (0.3-mg/kg bid s.c.), phenobarbital (20mg/kg oral), or saline. CYP2E1 was induced by nicotine 130% in liver microsomes (Western blotting). Staining for CYP2E1 (immunocytochemistry) was concentrated around the central vein. CYP2A6 was decreased 59% by nicotine. Distribution of CYP2B6 was uniform in liver. Activities of both CYP2A6 and CYP2B6 were decreased. Phenobarbital, a known inducer of CYP2B6, increased its expression by 650%. CYP2D6 levels did not change with nicotine treatment, and distribution was also uniform in liver. This model allows us to examine regional distribution of CYPs in liver and to distinguish the effects of nicotine from cigarette smoke. These results illustrate the differential regulation of drug metabolizing enzymes by nicotine: increased CYP2E1 (inactivates ethanol), decreased CYP2A6 (inactivates nicotine), decreased CYP2B6 (activates bupropion), and no change for CYP2D6 (activates codeine and inactivates antidepressants). Decreased CYP2A6 and CYP2B6, and increased CYP2E1 are consistent with the decreased nicotine metabolism and increased ethanol metabolism seen in smokers.  

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POS2-067  SAFETY OF METHOXSALEN: A CYP2A6 INHIBITOR

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Nicotine is the active component of tobacco dependence responsible for the psychoactive and dependence producing properties of cigarette smoking. In humans, 80% of nicotine is metabolized into cotinine by the hepatic enzyme cytochrome P450 2A6 (CYP2A6). Methoxsalen is a marketed drug (for treatment of psoriasis) that is a potent CYP2A6 inhibitor at low doses. Inhibition of CYP2A6 by Methoxsalen (10 mg) decreases smoking and can enhance oral nicotine systemic bioavailability (Sellers et al., 2000). Methoxsalen in current clinical doses (30-40 mg acute single dose) is a photosensitizer associated with a small risk of skin cancer, liver function abnormalities and cataracts. DSM-IV tobacco dependent subjects (N=30; 12 males, 18 females) received methoxsalen 10 mg t.i.d. or placebo for 2 weeks each in a randomized, double-blind, crossover design study. Compared to placebo, methoxsalen patients did not show photosensitization (in response to UVA and UVB), effects on liver function tests or ocular lens changes. Plasma methoxsalen concentrations with divided doses of 10 mg were barely detectible and were only 1/20th those seen after single doses of methoxsalen 30-40 mg, presumably due to non linear first pass extraction of methoxsalen. Methoxsalen 10 mg, t.i.d. for 2 weeks is safe. Such safety would support short-term clinical efficacy study for treating tobacco dependence.  

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POS2-068  PRELIMINARY RESULTS OF A PHASE 2 SAFETY TRIAL WITH NICVAX, A CONJUGATED NICOTINE VACCINE. A DOUBLE-BLIND, PLACEBO-CONTROLLED STUDY IN HEALTHY SMOKERS AND NON-SMOKERS

Edwin Wagenaar*,MA, Onno van Schayck,PhD, Roxanne Akhavain, Arjen de Vos,M,PhD.  

Introduction: Nicotine is a small molecule that does not elicit an immune response. Nabi Biopharmaceuticals has developed NicVAX, a conjugate vaccine consisting of 3'-aminomethylnicotine bound to recombinant P. aeruginosa exoprotein A, a non-toxic carrier protein. In animal models, NicVAX-induced, nicotine-specific antibodies reversibly binds to plasma nicotine, preventing bound nicotine from crossing the blood-brain barrier. Therefore, CNS nicotine levels are decreased and nicotine effects may be minimized. Methods: 21 healthy smoking and 9 healthy non-smoking volunteers were randomized (8:1 and 2:1), to receive 100 microgram of vaccine or alum placebo on days 0, 14, 28 and 182. Results: The study is ongoing, therefore only blinded safety data for 18 subjects who have been on study for at least 35 days will be presented. The vaccine was well tolerated; no serious adverse events were observed. Local reactogenicity events were consistent with other intramuscular vaccines. 10 of 18 subjects reported at least one local reactogenicity event after the first and second injection, whereas only 5 of 18 did so after the third injection. The most frequent events, transient ache or tenderness at the injection site were reported by 11%–47% of subjects. 5, 7, and 2 subjects reported at least one systemic reactogenicity event after the 1st, 2nd, and 3rd injection. The most frequent events, headache, malaise or myalgia were reported by 5%-23% of subjects. Most events were mild, self limiting, and resolved within a few days. None required medical intervention. Conclusion: NicVAX seems to be safe and well tolerated.  

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POS2-069  NICOTINE VACCINE MARKEDLY SLOWS NICOTINE ELIMINATION IN RATS
Satoskar, Stephanie; Keyler, Dan E.; St.Peter, John V.; Raphael, Donna; Ross, Cathy; Dufek, Matthew; Burroughs, Danielle; LeSage, Mark G.; Pentel, Paul R.

The primary aim of nicotine vaccines is to reduce nicotine distribution to brain, but slowed nicotine elimination could also contribute to the ability of vaccination to attenuate nicotine’s effects. In the current study the effect of vaccination on nicotine pharmacokinetics was studied during and after chronic nicotine infusion in rats. Vaccination reduced mean systemic nicotine clearance 23-fold, and clearance was inversely correlated with serum nicotine-specific antibody titers. Serum nicotine levels from control rats were fitted to a 1 compartment model with a terminal half-life of 1.5 h. Serum nicotine levels from vaccinated rats were fitted to a 2 compartment model with an initial half-life of 7.5 h and a terminal half-life of 4.9 days. The steady state volume of distribution of nicotine was 35% lower in vaccinated rats than in controls, reflecting the binding and sequestration of nicotine in serum. These data show that vaccination dramatically slows nicotine elimination in rats. The much longer serum half-life of nicotine in vaccinated rats versus controls could contribute to the effects of vaccination on nicotine-related behaviors. The very long terminal serum nicotine half-life in vaccinated rats may represent slow redistribution of nicotine from tissues, and could result in prolonged low level exposure to nicotine after cessation of nicotine dosing.

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POS2-070  IDAZOXAN PARTIALLY ATTENUATED REWARD DEFICIT ASSOCIATED WITH NICOTINE WITHDRAWAL IN RATS
S. Semenova*, A. Markou

Decreased noradrenergic function is one of the neurotransmitter abnormalities hypothesized to be involved in depression. Nicotine withdrawal is characterized by depression-like symptomatology (reward deficit; anhedonia), that similarly to non-drug-induced depressions may also be partly mediated by decreased noradrenergic function. The aim of the present study was to assess whether increased noradrenergic transmission through administration of idazoxan, an antagonist at presynaptic alpha2-adrenergic receptors, would reverse the reward deficit associated with nicotine withdrawal. A rate-independent current-intensity discrete-trial threshold procedure was used to assess brain self-stimulation reward thresholds in rats prepared with electrodes in the lateral hypothalamus. Threshold elevations provide an operational measure of ‘diminished interest or pleasure’ (i.e., anhedonia) during spontaneous nicotine withdrawal. Observational methods were used to assess somatic signs of nicotine withdrawal. Nicotine dependence was induced by continuous nicotine infusion via osmotic minipumps (9 mg/kg/day nicotine salt, 7 days). Idazoxan (1 mg/kg, i.p., 30 min pretreatment) partially attenuated and significantly shortened the threshold elevations associated with spontaneous nicotine withdrawal without in nicotine-treated rats compared to nicotine-treated rats injected with vehicle during withdrawal. Idazoxan had no effect on thresholds in saline-treated rats, nor on somatic signs of nicotine withdrawal. Further, there was no effect of idazoxan treatment on response latencies in either saline- or nicotine-treated rats. Attenuation of threshold elevations, but not of the somatic signs, associated with nicotine withdrawal with idazoxan suggests that decreased noradrenergic neurotransmission is involved in mediating the affective, but not the somatic, aspects of nicotine withdrawal. Thus, there may be homology between drug- and non-drug-induced depressions.

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POS2-071  ANTIDEPRESSANT EFFECTS OF MECAMYLAMINE IN C57BL/6J MICE
R.L. Rabenstein*, B.J. Caldarone, and M.R. Picciotto

Recently it has been proposed that many antidepressant medications can act as non-competitive antagonists at nicotinic acetylcholine receptors. Thus, nicotinic acetylcholine receptors may be critical in pathways regulating mood. To explore the relationship between nicotinic acetylcholine receptors and depression in a more controlled setting we used male C57BL/6J mice to determine the effect of the nicotinic antagonist mecamylamine with or without previous nicotine exposure on behavior in the tail suspension and learned helplessness animal models of depression. Mice were exposed to nicotine or tartaric acid in their drinking water for four weeks before testing began. Mecamylamine (1mg/kg) or saline was administered by i.p. injection thirty minutes prior to the onset of testing. The effect of peripheral nicotinic receptor blockade was controlled for in a separate series of experiments using hexamethonium (5mg/kg) or saline, administered by i.p injection twenty minutes before task onset. Regardless of past nicotine exposure, mecamylamine treatment resulted in a decrease in depressive behavior in the tail suspension task, while only the nicotine pre-treated animals showed a decrease in depressive behavior in learned helplessness. No differences were seen in any group in the hexamethonium experiments. Animals naive to nicotine were tested for dose response to mecamylamine in both tail suspension and forced swim tasks. Significant antidepressant-like effects were seen in both tasks at the 1mg/kg dose. The current data support the idea that central nicotinic receptor blockade has antidepressant-like effects and that administration of nicotinic receptor antagonists such as bupropion aid in smoking cessation.

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POS2-072  ACQUISITION AND MAINTENANCE OF NICOTINE SELF-ADMINISTRATION IN THE MOUSE
Rebecca C. Steiner, B.S.*, Sarah L. King, Ph.D., Marina R. Picciotto, Ph.D., Yale University

Nicotine self-administration in the rat is an experimental model of nicotine reward, however chronic nicotine self-administration has not been established in the mouse. Here we show that mice will acquire and maintain nicotine self-administration over a long period of time. C57BL/6J mice were implanted with a jugular vein catheter and assigned to one of three treatment conditions: nicotine (0.03 milligram/kilogram/infusion), cocaine (0.75 milligram/kilogram/infusion), or saline. The mice were placed in operant chambers for 1 hour/day and allowed to nose poke for infusions. Cocaine self-administration was acquired within the first 14 sessions and responding was stable over subsequent sessions. Nicotine self-administration required a greater number of sessions to meet acquisition criteria, with most of the mice acquiring nicotine self-administration within an additional 7 sessions (day 21). Mice in the nicotine self-administration group also exhibited greater variability within the group, and between daily sessions, than the mice in the cocaine self-administration group. Chronic nicotine self-administration in the C57BL/6J mouse is not as robust or consistent as cocaine self-administration, however the majority of mice will acquire and maintain chronic nicotine self-administration. This technique will be useful for testing nicotine reward in different lines of nicotinic receptor subunit knockout and transgenic mice.

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ENVIRONMENTAL STIMULI CONDITIONED TO DRUG SELF-ADMINISTRATION REINSTATE NICOTINE-SEEKING BEHAVIOR IN AN ANIMAL MODEL OF RELAPSE

Xiu Liu, M.D., Ph.D.*, Susan K. Yee, B.S., James G. Lee, B.S., Russell E. Poland, Ph.D., Robert N. Pechnick, Ph.D.,

ENVIRONMENTAL STIMULI CONDITIONED TO DRUG SELF-ADMINISTRATION REINSTATE NICOTINE-SEEKING BEHAVIOR IN AN ANIMAL MODEL OF RELAPSE. Xi Liu, M.D., Ph.D.*, Susan K. Yee, B.S., James G. Lee, B.S., Russell E. Poland, Ph.D., Robert N. Pechnick, Ph.D., Department of Psychiatry, Cedars-Sinai Medical Center, Los Angeles, CA 90048; Brain Research Institute, UCLA School of Medicine, Los Angeles, CA 90024 Clinical literature suggests that exposure to drug-related environmental stimuli are an important factor in triggering relapse in abstinent tobacco smokers. Using an animal model of relapse, this study was designed to investigate the response-reinstating effects of a drug-paired conditioned stimulus on nicotine-seeking behavior in rats. Male Sprague-Dawley rats were placed on a food restriction regimen throughout the experiment. In daily 60-min sessions, animals were trained in standard operant conditioning chambers to intravenously self-administer nicotine (0.03 mg/kg/infusion) on a fixed ratio 5 schedule of reinforcement. Each nicotine delivery was contingently paired with a 5 s illumination of a cue light located just above the active lever. After completion of the 30-day conditioning training, rats were subjected to daily extinction sessions where the light cue was withheld and saline was substituted for nicotine. One day after rats reached extinction criterion, the reinstatement tests (lasting 60 min) were conducted where the light cue was represented without delivery of nicotine. Response-contingent presentation of the nicotine-paired light cue significantly reinstated extinguished responding at the previously drug-reinforced active lever. In contrast, responses at the inactive lever remained at extinction levels. The results suggest that environmental stimuli conditioned to drug self-administration can elicit nicotine-seeking behavior in abstinent subjects and that the present procedures may be useful for studying neurobiological mechanisms of nicotine-seeking behavior and relapse.

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EFFECTS OF NICOTINE ON IMPULSIVE CHOICE IN RATS

Matthew L. Locey*, Bethany Raiff, & Jesse Dallery

Recent research suggests that cigarette smokers are more impulsive than non-smokers. However, the extent to which nicotine affects impulsive choice remains unclear. The present study examined the effects of nicotine on impulsive choice by using an adjusting delay procedure. Six rats chose between a delayed 3-pellet reinforcer and an immediate single pellet reinforcer. The delay to the 3-pellet reinforcer was adjusted until choice reflected indifference between the alternatives. After stable baseline responding, subjects were exposed to acute and chronic nicotine administration. Under acute administration, dose-dependent increases in impulsivity were obtained for all subjects, suggesting important implications about the effects of nicotine on impulsive choice. Chronic nicotine administration increased impulsivity independent of dose or presence of drug.

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EFFECTS OF NICOTINE ON OBSERVING RESPONSES

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For smokers, nicotine is correlated with many sensory stimuli (e.g. smell of smoke, taste, etc.). In one day, a smoker might experience 300 such pairings between nicotine and the correlated sensory stimuli. Conditioned reinforcers are thought to gain their reinforcing efficacy through Pavlovian conditioning, so these stimuli might have reinforcing qualities apart from nicotine itself. It is not clear whether nicotine enhances, inhibits, or does nothing at all to the reinforcing properties of the stimuli correlated with primary reinforcement. Six rats were exposed to the observing response procedure, where one stimulus was paired with a variable-interval 45 sec ond food reinforcement schedule and a different stimulus was paired with extinction. An observing response was required for the schedule-correlated stimulus to appear for 10 seconds. Upon stable responding, rats were given 5 acute doses of nicotine systemically before sessions. For most rats, nicotine produced a bitonic function, with some doses increasing responding for the schedule-correlated stimuli. This suggests that nicotine might enhance the efficacy of conditioned reinforcers.

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ISOLATION-READED RATS ARE MORE SENSITIVE THAN ARE ENVIRONMENT-READED RATS TO NICOTINE’S ACTIVITY-STIMULATING ACTIONS

Neil E. Grunberg*, Ph.D., & Brenda M. Elliott, M.S., Uniformed Services University of the Health Sciences

Tobacco use is inversely related to socioeconomic status. These relationships may reflect psychosocial influences and educational differences regarding health risks of tobacco use. Alternatively, impoverished environments may sensitize individuals to actions of nicotine – the drug of addiction in tobacco. Environmental conditions alter behavioral effects of morphine and amphetamines. Perhaps enrichment also alters nicotine’s behavioral actions. The present study tested the hypothesis that exposure to impoverished environments increases behavioral responses to nicotine, compared with exposure to enriched environments. Effects of repeated nicotine administration were compared in isolation-reared and enrichment-reared rats. Twenty-four male Sprague-Dawley rats were housed in either isolation or enriched housing conditions for 13 days. Then, nicotine (0.5 mg/kg) or saline was administered via subcutaneous injection for 10 days. Locomotor activity was measured on each drug day. Isolated animals were significantly more active in the open-field than were enrichment-reared animals. Locomotor activity was greater in the nicotine treated animals, with the greatest activity in the isolated animals that received nicotine. These findings suggest that isolation rearing results in enhanced sensitivity to locomotor stimulant effects of nicotine compared to effects of nicotine in rats reared in enriched environments. These findings are consistent with previous reports regarding behavioral effects of morphine and repeated effects of amphetamines and may help to explain the inverse relationship between socioeconomic status and tobacco use.

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POS2-077

BETA2 SUBUNIT-CONTAINING NICOTINIC ACETYLCHOLINE RECEPTORS ARE ESSENTIAL FOR ANTIDEPRESSANT RESPONSIVENESS

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Many studies have demonstrated a high comorbidity between smoking and depression. Depressed patients also have a harder time quitting smoking, possibly due to the onset of depressive symptoms following smoking cessation. Nicotine has been shown to improve mood in depressed patients, suggesting that smokers may be using nicotine as self-medication to relieve depressive symptoms. A wide range of antidepressants have been shown to act as non-competitive antagonists of nicotinic acetylcholine receptors (nAChRs). We have used a mouse genetic model to determine whether the behavioral effects of antidepressants may be mediated, in part, through actions on nAChRs. Knockout mice lacking the beta2 subunit of the nACHR (beta2KO) lack high-affinity nAChRs throughout the brain. In this study, beta2KO mice were used to determine whether efficacy of the tricyclic antidepressant amitriptyline (AMI) would be altered in mice lacking high-affinity nAChRs. Wild type and beta2KO mice were administered 200ug/ml AMI in their drinking water in 2% saccharin, and control mice received 2% saccharin alone. Following antidepressant treatment, mice were tested in the learned helplessness, forced swim and tail suspension models of depression. Wild type mice showed robust antidepressant-like effects of AMI in all 3 models. In contrast, beta2KO mice treated with AMI were not different from saccharin-treated beta2KO mice in any of the 3 models. These data demonstrate that beta2KO mice are insensitive to the tricyclic antidepressant AMI, suggesting that some of the therapeutic effects of antidepressants may be mediated through actions at high affinity nAChRs.

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POS2-079

NICOTINIC RECEPTOR MECHANISMS AND NEUROPSYCHOLOGICAL DEFICITS IN NON-SMOKERS WITH SCHIZOPHRENIA

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Cigarette smoking rates in schizophrenia in clinical settings is found to be 58-88% versus ~23% in non-psychiatric populations. Nonetheless, there are a minority of schizophrenic patients who are non-smokers (never or former smokers), and it is likely that detailed characterization of schizophrenic non-smokers could reveal clues about why most schizophrenic patients are vulnerable to tobacco addiction. The present study examined neurocognitive function in schizophrenic non-smokers and matched non-psychiatric non-smokers, and the effects of a nicotinic acetylcholine receptor (nAChR) antagonist using pre-treatment with the high-affinity nAChR antagonist mecamylamine (Mec; Inversine®). Using a within-subjects, randomized, counterbalanced design, schizophrenic (n=6) and control (n=12) non-smokers were randomly pre-treated for three days with MEC (0.0, 5.0, and 10.0mg/day) over three separate test weeks. All subjects performed repeated neuropsychological assessments including visuospatial working memory (VSWM), Continuous Performance Test (CPT), Wisconsin Card Sorting Test (WCST) and Stroop Color Word Test (SCWT) during three sequential test sessions per week, over three test weeks. Main effects for diagnosis were found for VSWM-30sec delay [F=30.4, df=1, 144, p<0.01], CPT (p<0.05 for all outcomes) WCST (p<0.01 for all outcomes) and Stroop Interference [F=12.6, df=1,144, p<0.01]. However, there were no main effects of session or MEC dose, or any of these neuropsychological outcomes, and no significant 3-way (Diagnosis x Session x Dose) interactions. In comparison to the finding that smoking enhances neurocognitive function in schizophrenics and that MEC blocks such smoking-induced cognitive enhancement (Sacco, KA, et al, 2003, under review), MEC administration did not significantly alter cognitive performance in either schizophrenic or control non-smokers. This suggests that while smoking modulates neurocognition in schizophrenic patients, in the absence of cigarette smoking, nAChR blockade has a minimal effects on these diagnosis-related neurocognitive deficits. The significance of these in relation to the post-mortem findings of differential expression of nAChRs in schizophrenic non-smokers versus smokers is discussed.

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POS2-078

NICOTINIC ACETYLCHOLINE RECEPTOR SUB-UNIT MRNA EXPRESSION WITHIN MEDULLARY CATECHOLAMINERGIC NUCLEI

Kathryn O’Leary, MS* and Frances Leslie, PhD

The dopaminergic neurons of the substantia nigra/ventral tegmental area and the noradrenergic neurons of the locus coeruleus express a complex array of nicotinic acetylcholine receptor (nAChR) subunit mRNAs. However, little is known about nAChRs in the medullary catecholamine nuclei. The nucleus tractus solitarius and ventrolateral medulla (VLM) are composed of both noradrenergic (A2, A1 respectively) and adrenergic (C2, C1) neurons. Both nuclei play key roles within the autonomic nervous system, mediating cardiovascular, respiratory, and neuroendocrine functions through both ascending and descending efferents. Nicotine has been shown to regulate many of these functions. In addition, nicotine-stimulated [3H]NE release has been demonstrated in projection target structures of these medullary catecholamine nuclei. Using double-label in situ hybridization, we have examined nAChR subunit mRNA expression within these nuclei. alpha2 and beta4 were not expressed within any of the catecholamine neurons examined, and beta3 mRNA was only detected in the VLM neurons. The A1 and C1 neurons expressed all of the remaining subunit mRNAs studied (alpha3-alpha7 and beta2-beta3) to varying degrees. Depending on the subunit, between 10% and 100% of the noradrenergic cells and 6% and 100% of the adrenergic neurons were positive for subunit mRNA, with the fewest cells expressing beta3 mRNA and 100% cells positive for beta2 mRNA. A2 was similar to A1 and C1 except for the lack of alpha6 and beta3 mRNA expression. C2 expressed all of the subunit mRNAs detected in A1 except beta3. Differential expression within these nuclei suggest nAChR regulation of medullary catecholamine output that is function specific.

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POS2-080

A CHROMOSOME 15Q13 MICRODELETION CONTAINING THE PARTIAL DUPLICATION OF THE HUMAN ALPHA7 NICOTINIC RECEPTOR IS ASSOCIATED WITH SCHIZOPHRENIA.

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The chromosome 15q13-14 region has been genetically linked to schizophrenia and an auditory sensory gating deficit. Putative candidate genes in this area include the alpha7 nicotinic acetylcholine gene (CHRFA7A) and a partial duplication of alpha7 (CHRFA7A). A chromosomal segment including the CHRFAM7A gene locus, but not the CHRNA7 locus, is deleted in some individuals. Here we provide more detailed mapping of a 2.5 Mb genomic region that includes both genes. We also have employed a PCR-based method to quantify CHRFAM7A alleles in a large, multi-ethnic population of Caucasian, African-American and Hispanic descent for association with schizophrenia. A deletion was associated with schizophrenia (genotype; Chi2=5.106, p=0.024, allele frequency; Chi2=5.149, p=0.023). Association of the deletion genotype with schizophrenia was highest in the African-American population (genotype Chi2=4.57, p=0.033). The frequency of the deletion was higher in schizophrenics than controls in Caucasians and Hispanics but did not reach statistical significance. The association of the deletion with schizophrenia is significant as it provides further support for the 15q13 region as a susceptibility locus for the disorder. Further insight as to the nature of this naturally occurring deletion will lead to better understanding of the genetic importance of alpha7 in schizophrenia.

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ASSOCIATION STUDY WITH SNPs FROM CANDIDATE GENES FOR SMOKING BEHAVIOR

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The genetic basis of smoking behavior and nicotine dependence remains largely unknown. Currently, we have collected more than 1,400 DNA samples for genonic analysis from smokers and their family members. Based on the results from our genome-wide linkage analysis, 6 chromosomal regions were identified as likely to harbor susceptibility genes for nicotine dependence and/or smoking-related behaviors. To identify genes that contain allelic variants predisposing individuals to nicotine dependence, more than 50 candidate genes have been selected for linkage-based association analysis on the basis of their biological function(s) and/or location within the linked regions. We are genotyping our DNA samples by the TaqMan assay with more than 80 SNPs from those candidate genes. Association analysis reveals a significant association of several SNPs with nicotine dependence. In this ongoing collaborative effort, we are continuing to recruit more families for genotyping and hope to eventually define the association relationship between these SNPs and nicotine addiction. (Supported by NIH grant DA-12844).

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THE DOPAMINE D2 RECEPTOR FAMILY (DRD2, DRD3, & DRD4) AND GENETIC ANALYSIS OF SMOKING-RELATED BEHAVIORS

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The genes for the D2-like dopamine receptors (DRD2, DRD3, and DRD4) encode proteins that initiate responses to the neurotransmitter dopamine. The difficulty of smokers in cessation is attributed to nicotine and nicotine’s action results in activation of the mesolimbic dopamine reward pathway. Although smoking-related behaviors are multi-factorial, polygenic outcomes, the relationship of smoking and dopamine makes examination of these genes important in understanding the genetic underpinnings of the behaviors. A sub-sample of adult volunteers (recruited by random-digit dialing) provided DNA (from buccal swabs) that was subsequently genotyped for 217 individuals. Analysis of variance was utilized to determine effects of DRD2, DRD3, and DRD4 on various smoking-related behaviors. Preliminary analysis indicates that specific alleles of the DRD2 gene are associated with fewer cigarettes smoked per day (p=0.015). For DRD3, associations were found with increasing heaviness of Smoking Index (p=0.026), and questions related to desire/craving (0.035). Finally, DRD4 long alleles were associated with reduced severity of three withdrawal symptoms (desire/craving, anger/irritability, and trouble sleeping) (p=0.03, 0.04, and 0.05, respectively). When genotypes are characterized as dichotomous variables, an interaction is suggested between the three genes and aspects of weight gain and appetite during withdrawal.

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ACUTE OPIOID ANTAGONIST AND CIGARETTE SMOKING EFFECTS ON THE HPA AXIS

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Earlier studies have reported that opioid antagonists inhibit the hypothalamo-pituitary-adrenal (HPA) axis, thereby increasing plasma cortisol and adrenocorticotropin (ACTH) levels. Further, cigarette smoking has been shown to increase levels of cortisol and ACTH, but the exact mechanism is unknown. This study examined the effects of acute naltrexone and cigarette smoking on HPA axis hormone response. Forty-two healthy smokers (Mean=20.4 cigs/day; 22 men, 20 women) were tested in two separate morning sessions after maintaining 12 hours of smoking abstinence in an overnight stay at the Clinical Research Center. Each participant received 50 mg oral naltrexone or identical placebo (in random order) and blood samples were obtained at 0, 90, 120, and 180 min for ACTH and 0, 90, 120, 150, 180, and 210 min for cortisol. Participants smoked a cigarette of their own brand immediately prior to the 180 min time point in both sessions. Thirteen of these subjects also participated in a third randomized laboratory session where they received 50 mg naltrexone but smoking was not allowed. Results showed that naltrexone significantly increased cortisol and ACTH levels throughout the session compared to placebo (Med x Time, p<.05; simple effects 90-210 min, p<.05). Further, naltrexone-induced cortisol increases were greater in female compared to male smokers (Sex x Med, p<.005). Comparing the naltrexone-smoking vs. naltrexone-non-smoking sessions revealed that cigarette smoking potentiated naltrexone-induced increases in cortisol (p<.01) and ACTH (p<.06). The results show further evidence for an interaction between cigarette smoking and the endogenous opioid system at the level of the HPA axis.

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SEX DIFFERENCES IN DOPAMINERGIC ACTIVATION BY CHRONIC NICOTINE

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Activation of the mesolimbic dopamine system is thought to be a critical component underlying addictive behaviors, including smoking. It has been hypothesized that initial effects of nicotine on the dopamine system activate high affinity nicotinic acetylcholine receptors (nAChRs) containing the beta2 subunit, but that these receptors rapidly desensitize and are not critical for ongoing activation of the mesolimbic system. The purpose of this study was to understand the role of beta2 subunit-containing nAChRs in activation of the dopamine system by repeated nicotine administration. CS7BL/6J female and male mice were administered 200ug/ml of nicotine in the drinking water and the development of locomotor activation was measured. In male mice, locomotor activation was observed after chronic, but not acute nicotine exposure. In contrast, females showed an initial locomotor activation after acute nicotine that did not increase over days. Both female and male knockout mice lacking the beta2 subunit of the nicotinic acetylcholine receptor (nAChR) did not show the increase in locomotor activity in response to chronic nicotine. The locomotor activating effects of nicotine were completely blocked by oral administration of the dopamine receptor antagonist pimozide at doses that did not alter baseline activity. Pimozide blocked locomotor activation by nicotine at a lower dose in females (5.0ug/ml) than in males (10.0ug/ml). These data demonstrate that beta2 subunit-containing nAChRs are critical for ongoing activation of the dopamine system by chronic nicotine administration and the resulting locomotor activation. These results may also help us understand the biological basis for why women have less success than men in quitting smoking.

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POS2-085  PAIN RESPONSES IN ADOLESCENT AND ADULT SMOKERS

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Avoidance of negative states like pain has been proposed to play a significant role in maintaining smoking behavior in adult smokers, but we know little about the influence of adolescent smoking and/or gender on these responses. We evaluated pain tolerance to, and potential mediators (cardiovascular and mood measures, salivary cortisol) of, the cold pressor task (CPT) in adolescent male and female smokers and nonsmokers. Participants (43 nonsmokers, 53 smokers) completed the CPT during two separate sessions, following either minimal deprivation (MD) or 42 hours of deprivation (D) from tobacco in smokers. Female smokers had significantly lower levels of pain tolerance following MD and D when compared with male smokers and male and female nonsmokers (p’s<0.01-0.001). Male smokers had pain tolerance levels that were similar to those in male and female nonsmokers following MD, but were significantly suppressed (p<0.05) following D. Although pain tolerance was not related to baseline mood states or blood pressure, female adolescent smokers did experience significantly lower CPT-induced increases in systolic blood pressure and trends towards suppressed CPT-induced cortisol increases when compared with all the other groups. Pain tolerance was not altered by light or heavy smoking, which suggests that the suppressed pattern of responding in female smokers may be a risk factor for smoking in adolescent females. These findings in adolescent smokers will be contrasted with CPT-induced pain responses in male and female adult smokers. These preliminary findings suggest a different clinical role for pain in maintaining smoking behavior in adolescent male and female smokers.

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POS2-087  INTERFERON GAMMA LEVELS BETWEEN NON-SMOKERS AND SMOKERS WHILE SMOKING AND DURING 24-HR ABstinence DIFFER DEPENDING ON GENDER

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Interferon (IFN)-gamma is a proinflammatory cytokine released in response to infection and disease. High IFN-gamma levels are associated with autoimmune diseases, whereas lower IFN-gamma levels suggest decreased immune response capacity. Women show increased immune responsiveness to antigenic stimuli compared to men, resulting in an increased incidence of autoimmune disease in women (Cannon & St. Pierre, 1997). Interestingly, female smokers appear to be at an increased risk for certain autoimmune diseases (Hernan et al. 2001), though the exact mechanism by which this occurs is not clear. With regard to cigarette smoking and IFN-gamma, nicotine may suppress IFN-gamma (Ouyang et al. 2000), although other studies suggest that smoking may actually increase IFN-gamma. The present study examined differences in IFN-gamma responses to nicotine in male and female smokers while smoking and following 24-hr smoking abstinence, and in non-smokers. Twenty-two non-smokers (12 males, 10 females) participated in one laboratory session while and 20 smokers (12 males, 8 females) participated in two sessions, one while smoking ad lib, and another following 24 hr smoking abstinence. Blood was collected at the end of each session for plasma IFN-gamma assessment. Serum cytokine levels confirmed smoking status. Among non-smokers, females displayed lower IFN-gamma levels than did males (p<0.05). Conversely, among smokers, females displayed higher IFN-gamma levels than did males, regardless of smoking condition (p’s<0.05). Findings offer insight into a possible mechanism as to why female smokers have a higher rate of certain autoimmune diseases than do males.

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POS2-086  SEX DIFFERENCES IN BLOOD PRESSURE AND ARGinine-VASOPressin LEVELS IN REGULAR SMOKERS WHILE SMOKING AND FOLLOWING 24-HR ABstinence AND IN NON-SMOKERS

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The hormone arginine vasopressin (AVP) is involved in blood pressure and blood volume control. Acute nicotine exposure increases plasma AVP and results in elevated blood pressure and heart rate. However, chronic nicotine exposure via tobacco use results in diminished AVP levels. The relationship among nicotine exposure, AVP, and blood pressure has not been examined in women smokers or following smoking abstinence. This study examined AVP levels in male and female smokers while smoking and following 24-hr smoking abstinence, and in non-smokers. Twenty nonsmokers (10 males, 10 females) and 18 smokers (9 males, 9 females) participated. Nonsmokers came to the laboratory once, whereas smokers came twice: while smoking ad lib and following 24-hr abstinence. Plasma was collected for AVP assessment; salivary cotinine levels confirmed smoking status. Among non-smokers, males had higher AVP levels than did females (p<0.05). Among smokers, however, females displayed higher AVP levels than did males while smoking and following abstinence (p’s<0.05). Men who smoked had lower AVP levels than did non-smoking men, while female smokers actually displayed higher AVP levels compared to their non-smoking counterparts. With respect to blood pressure, males had higher mean arterial pressure than did females, regardless of smoking status or condition (p’s<0.05). AVP levels were not affected by 24-hr abstinence among smokers, regardless of sex, which suggests that dysregulation in AVP levels persist following cessation. Sex differences in AVP levels between smokers and non-smokers are discussed, along with MAP findings.

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POS2-088  IMPACT OF NICOTINE ON CORTICAL GABA LEVELS ACROSS THE MENSTRUAL CYCLE IN FEMALE SMOKERS

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BACKGROUND: Nicotine has pronounced effects on central GABAergic function, which may mediate the relationship between smoking and negative affect, particularly in women. Thus, we sought to determine whether women who smoke have abnormalities in cortical GABA levels as measured using proton magnetic resonance spectroscopy (1H-MRS). METHODS: Six healthy female smokers underwent 1H-MRS using a 2.1 Tesla magnet to measure occipital cortex GABA concentrations according to methods previously described. As GABA levels are known to change across the menstrual cycle, women were scanned during both the follicular and mid-luteal phases. GABA levels from smokers were compared to those from a historical control group of healthy menstruating non-smokers. Data was analyzed according to a mixed effects model. RESULTS: Not taking menstrual cycle phase into consideration, mean ± SD of GABA levels expressed in mmoles/kg brain were significantly reduced in the female smokers (1.00 ± 0.16) compared to non-smoking women (1.41 ± 0.37) (t(26)=4.01, p=0.0005). The smoking status by phase of menstrual phase interaction was statistically significant (F(1,13.9)=8.03, p=0.013). For smokers, follicular phase GABA levels (0.95 ± 0.15) were remarkably similar to luteal phase levels (1.07 ± 0.14) (t(12.8)=0.93, p=0.37). Follicular phase GABA levels for healthy controls (1.67 ± 0.25) were significantly higher than luteal phase levels (1.15 ± 0.32) (t(16.3)=5.9, p<0.001). CONCLUSION: These findings suggest that nicotine administration not only lowers cortical GABA levels in female smokers compared to non-smokers, but highlights the complete absence of the normal menstrual cycle cycllicity in cortical GABA levels seen in non-smoking women.

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POS2-089
SMOKING OF TOBACCO AND PHYSIOLOGICAL FUNCTIONAL SKILLS
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Research problem. Smoking of tobacco, by its properties, is a medical and social problem, which with all its physical and tolerance dependence, is a problem that has a negative impact on health. This habit favours increase of illnesses and death rates from illnesses of cardio-vascular system, respiratory and other systems. Stopping of smoking causes abstinence symptoms, which are greater obstacles to the others than to the person himself. Purpose. The purpose of this study is that through research of differences of two groups of people: one of smokers and another one of non-smokers, to verify differences that smoking causes in some physiological functional skills, during the period of rest, during sub-maximum physical efforts and during recovery. Material and methods. The research method of two groups was used: non-smokers’ group (77 entities) and smokers’ group (73 entities). The sub-maximal effort was conducted with Astrand’s test. During the test, the frequency of heartbeats, the respiration frequency, blood saturation with oxygen, absolute and relative maximal oxygen uptake was measured. The measurement was carried out during rest, during the sub-maximal test and during recovery. Results. Whereas the basic statistical parameters show systematic differences between the two groups in all values, the T-test proved differences between the two above-mentioned groups in the frequency of heartbeats while resting, the frequency of respiration during the second minute of recovery and in saturation of blood with oxygen in the period of rest, in the 6th minute of the test and in 1st, 2nd, 3rd, and 4th minute of recovery. Through discriminative analysis significant differences were proved in the measured values. Conclusion. From these results we reach the conclusion that the non-smokers group is distinguished with better saturation of blood with oxygen, with lower frequency of heartbeats and respiration, whereas it has higher values of absolute and relative maximal oxygen uptake, in comparison with the smokers’ group. These differences can be explained with the function of composition of smoke in terminal bronchioles, in increase of bronchial secretion, in oedema of epithelial cells, in paralysis of cilia in the surface of epithelial cells, as well as in the forming of carboxyhemoglobinemia.

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POS2-090
WHAT ARE THE COGNITIVE EFFECTS OF NICOTINE IN NON-TOBACCO USERS?
Betherea A. Kleykamp, M.S.*, #, Janine M. Jennings, Ph.D. %, Melissa D. Blank, B.A. #, Thomas Eisenberg, Ph.D.#, %Virginia Commonwealth University and %Wake Forest University.

Initial tobacco use episodes may involve nicotine self-administration by nicotine-naive individuals. The effects of these episodes may help predict subsequent tobacco use. Thus, understanding the effects of nicotine in nicotine-naive individuals may be relevant to understanding trajectories to tobacco dependence. The subjective and physiological effects of nicotine in nicotine-naive individuals are consistent across studies (e.g., dysphoria, increased heart rate) though the cognitive effects are not: different studies show positive, negative, or no effects on cognitive performance. These differences can be explained with the function of composition of smoke in terminal bronchioles, in increase of bronchial secretion, in oedema of epithelial cells, in paralysis of cilia in the surface of epithelial cells, as well as in the forming of carboxyhemoglobinemia.

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POS2-091
HIGH IMPULSIVITY NON-SMOKERS HAVE A ROBUST BRAIN METABOLIC RESPONSE TO NICOTINE
Steven G. Potkin*, David B. Keator, James Mbogori, Jessica A. Turner, Jean G. Gehricke, James H.

The brain mechanisms underlying the cause of nicotine dependence are unknown. Impulsivity traits are associated with increased susceptibility to nicotine dependence. We used FDG PET to measure brain metabolic response to nicotine administered by patch to 43 non-smokers, while the subjects performed a continuous performance task (CPT) or a control task. The Barratt Impulsivity Scale was used to divide subjects into those with low and those with high impulsivity traits. Low impulsivity trait subjects demonstrated no significant change in brain metabolic response to nicotine. In contrast, high impulsivity non-smokers demonstrated dramatic metabolic changes to low dose nicotine (3.5 mg. patch) while performing the CPT tasks, but not a control task involving retaliatory responding (Bushman 1995). In high impulsitive subjects, nicotine patch activated cortical and subcortical structures bilaterally throughout the brain. The greatest differences were observed in the dorsal visual stream, including the dorsal visual stream, dorsal somatosensory, motor, premotor, prefrontal cortices, the dorsal interior cingulate, retrosplenial, parahippocampal cortices, and insula. Subcortically, increases were present in the medial and posterior thalamus, amygdala, and adjacent basal nuclei, ventral mesencephalon, ventral/midline, and cerebellum. The observed differences were not a consequence of plasma nicotine or cotinine levels. These metabolic changes were not observed when subjects performed the control task. This PET study demonstrates a conspicuous lack of the brain metabolic response to nicotine in low impulsivity non-smokers in contrast to high impulsivity task-dependent brain response to nicotine in high impulsivity subjects. This biological difference in brain metabolic response to nicotine between high and low impulsivity trait subjects may explain differences in susceptibility to nicotine dependence.

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POS2-092
HOSTILITY TRAITS DIFFERENTIATE BRAIN METABOLIC RESPONSE TO NICOTINE
Steven G. Potkin*, David B. Keator, James Mbogori, Frances M. Leslie, Larry Jammer, Jessica A. Turner, James H. Fallon

The brain mechanisms underlying the cause of nicotine dependence are unknown. Hostility traits have been associated with increased susceptibility to nicotine dependence and have been put forth as an explanation for individual differences in nicotine susceptibility. We used FDG PET to measure brain metabolic response to nicotine administered by patch while the subject performed an aggression / retaliatory computer task (Bushman 1995) in 86 high-hostility and low-hostility young adults. High-hostility subjects had higher ratings of anger, impatience, irritability and nervousness and lower ratings of happiness, relaxation and curiosity than low-hostility subjects. Subjects were divided on the basis of smoking history. Smokers had significantly greater scores on impatience and restlessness than non-smokers. Low hostility non-smokers showed no brain metabolic response to 3.5 mg. nicotine patch, in contrast to the high hostility non-smokers who markedly increased their brain metabolic response in parts of nearly all cortical and sub-cortical areas. Correlational analyses in these non-smokers demonstrated greater metabolic increases in response to nicotine in subjects with greatest hostility trait measures. The observed differences were not a consequence of plasma nicotine or cotinine levels. A different pattern was observed for smokers. Low hostility smokers demonstrated no metabolic response to either 3.5 mg. or 21 mg. of nicotine. In contrast, the high-hostility smokers demonstrated widespread metabolic decreases bilaterally. This study demonstrates a conspicuous lack of the brain metabolic response to nicotine in low-hostility smokers and non-smokers, in contrast to a dramatic brain response to nicotine in high hostility subjects. This difference in brain metabolic response to nicotine may explain differences in susceptibility to nicotine dependence.

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SRNT  ◆  Poster Session 2

POS2-093  BRAIN DOPAMINE RELEASE INDUCED BY CIGARETTE SMOKING

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Substantial evidence from animal models demonstrates that dopamine (DA) release in the ventral striatum (VST) underlies the reinforcing properties of nicotine. In recent years, the 11C-raclopride bolus-plus-continuous-infusion positron emission tomography (PET) method has been used commonly to measure DA release in vivo. We sought to determine smoking-induced VST DA release using 11C-raclopride PET in humans. Twenty nicotine-dependent smokers (~15 cigarettes/day) underwent an 11C-raclopride bolus-plus-continuous-infusion PET session. During the scan, subjects had a 10-minute break outside the PET tomograph, with half of them smoking a cigarette and the other half not smoking (as a control condition). The group that smoked had greater reductions in 11C-raclopride binding potential (BP) than the group that did not smoke in the VST, particularly in the left ventral caudate/nucleus accumbens and left ventral putamen. Significant correlations were found between change in craving ratings and change in BP in these two regions from before to after the break. Thus, nicotine-dependent subjects who smoked during PET scanning had greater reductions in 11C-raclopride BP (an indirect measure of dopamine release) than nicotine-dependent subjects who had a similar break in scanning, but did not smoke. The magnitude of BP changes here were comparable to those found in studies of other addictive drugs using similar methodology, possibly related to the relatively predictable pattern of peak craving and craving alleviation in nicotine-dependent subjects.

Supported by a Veterans Affairs Type I Merit Review Award (A.L.B.), the Tobacco-Related Disease Research Program (A.L.B. [TKT-0098 and 11RT-0024] and E.D.L. [10RT-0091]), and the National Institute on Drug Abuse (A.L.B. [R01 DA15059]) and E.D.L. [R01 DA14093])

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POS2-094  ASSOCIATION BETWEEN THE SEROTONIN TRANSPORTER GENE AND NICOTINE DEPENDENCE

Marcus R. Munafo¹, Ph.D.*, Kate H. Roberts, B.Sc., Elaine C. Johnstone, Ph.D., Robert T. Walton, M.D., Patricia L. Yudkin, Ph.D., University of Oxford.

There are strong theoretical grounds for studying the 5HTT gene in relation to both affective variables and addictive behaviours. We investigated the association between the 5HTT gene and nicotine dependence, extending previous work by including measures of neuroticism and depressive symptomatology to explore the role of these potential confounding variables, in a sample of 151 smokers. A two-stage regression model to predict nicotine dependence (FTND) was tested, with neuroticism (EPQ-R) and depressive symptomatology (DIS) entered as independent variables in the first stage. The model significantly predicted FTND score (F = 3.70, p = 0.03). Depressive symptomatology was a significant independent predictor of nicotine dependence (Beta = 0.23, p = 0.03), while neuroticism was not (Beta = -0.01, p = 0.96). Neuroticism was retained in the model, however, as it was significantly correlated with both depressive symptomatology (r = 0.59, p < 0.0001) and FTND score (r = 0.18, p = 0.04) in the entire sample. Depressive symptomatology was also significantly correlated with FTND score (r = 0.23, p = 0.01). The addition of 5HTT genotype (LL vs SL or SS) in the second stage significantly increased the predictive power of the model (F change = 5.86, p = 0.02). 5HTT LL genotype was associated with a significant reduction in FTND score (Beta = -0.20, p = 0.02). Depressive symptomatology remained a significant independent predictor of nicotine dependence (Beta = -0.20, p = 0.04). Neuroticism remained non-significant (Beta = 0.03, p = 0.79). The association between 5HTT genotype and nicotine dependence does not appear to be mediated by neuroticism. Depressive symptomatology warrants further investigation as a predictor of nicotine dependence.

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POS2-095  SMOKING DEPRIVATION AND SATIETY ALTER THALAMIC RESPONSES TO SMOKING AND CONTROL CUES: AN fMRI INVESTIGATION

F. Joseph McClernon, Ph.D.*, F. Berry Hioet, B.S., Scott A. Huettel, Ph.D., Jonathan Wong, & Jed E. Rose, Ph.D., Duke University Medical Center

Previous neuroimaging studies have observed drug cue-elicited responses in brain regions associated with attention, motivation, emotion and reward. The thalamus, a region rich in nicotinic cholinergic receptors, serves as a sensory relay point and interconnects limbic with prefrontal regions and thus, likely plays a role in drug cue responding. In the present study, 16 dependent smokers underwent morning fMRI scanning after overnight deprivation and after smoking their usual number of cigarettes (session order randomly assigned). During scanning, participants viewed pictures of people smoking (smoking), people engaged in everyday activities (control), and animals, with the instruction to press a button upon seeing an animal. Averaged hemodynamic responses (HDR’s) were calculated for left and right thalamus and these values were submitted to ANOVA. Three participants were excluded due to excessive head motion. Main effects of smoking on thalamic responses were not observed. Responses to smoking stimuli were unaffected by deprivation while control stimuli exhibited smaller responses in the satiated compared to deprived condition, F(1,12) = 8.06, p = .015. Further, the time course of HDR’s varied as a function of deprivation and stimulus type, F (9, 108) = 2.87, p = .037. In the deprived condition, responses to control stimuli took longer to resolve than smoking stimuli. These and findings from other brain regions will be discussed in the context of models of drug cue reactivity.

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POS2-096  EFFECTS OF CIGARETTE SMOKING ON SPATIAL WORKING MEMORY AND CONTINUOUS PERFORMANCE TEST OUTCOMES IN SCHIZOPHRENIA: INVolvement of NICOTINIC RECEPTOR MECHANISMS

Kristi A. Sacco, Psy.D.*, Angelo Termine, B.S., Aisha A. Seyal, B.S., Melissa M. Dudas, B.S., Katie Bannon, Tansim Ludhi, Jennifer C. Vescichio, M.S.W., Suchitra Krishnan-Sarin, Ph.D., Peter I. Jatlow, M.D., Bruce E. Wexler, M.D., and Tony P. George, M.D. PRISM, Department of Psychiatry, Yale University

Cigarette smoking rates in schizophrenia are significantly higher than in the general population. Self-medication of clinical and cognitive deficits, abnormalities in brain reward pathways in schizophrenic disorders, and genetic, social and environmental factors may explain the comorbidity of nicotine addiction in schizophrenia. We evaluated the effects of cigarette smoking on spatial working memory and attentional deficits associated with schizophrenia, and the involvement of high-affinity nicotinic receptors in mediating smoking-related cognitive enhancement, using an overnight smoking abstinence and reinstatement paradigm in an outpatient laboratory setting. Using a within-subjects design, schizophrenic (n=20) and control (n=20) cigarette smokers were pre-treated with 0.0, 5.0, and 10.0 mg/day of the high-affinity nicotinic receptor antagonist Mecamylamine (MEC) for 3 days in a randomized, counterbalanced manner during three separate test weeks. Visuospatial working memory (VSWM) and Continuous Performance Test (CPT) tasks were performed during ad lib smoking, after overnight smoking abstinence (~12 hours), and again after smoking reinstatement. Overnight smoking abstinence led to undetectable plasma nicotine levels and a significant elevation in tobacco craving and withdrawal symptoms in both diagnostic groups, and was associated with a worsening of VSWM and CPT outcomes in schizophrenic versus control smokers. Smoking reinstatement reversed these abstinence-induced cognitive deficits in schizophrenics. While the effects of abstinence and reinstatement on CPT outcomes were similar in direction in schizophrenics and controls, there were differential effects on the VSWM task, with acute reinstatement enhancing VSWM performance in schizophrenics, and impairing VSWM in controls. Smoking-related enhancement of VSWM and CPT outcomes in schizophrenics was dose-dependently blocked by MEC (5.0 and 10.0 mg/day). These findings suggest that cigarette smoking modifies spatial working memory and CPT attentional deficits in schizophrenia versus control smokers, and that such enhancement is mediated by high-affinity nicotinic receptor stimulation. These findings may have implications for understanding the high rates of cigarette smoking in treatment of both neurocognitive deficits and nicotine dependence in schizophrenia.

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EFFECTS OF TOBACCO SMOKING ON EEG SOURCE LOCALIZATION AND REGIONAL CEREBRAL BLOOD FLOW

Edward F. Domino, M.D.*, Lisong Ni, M.S., Jon-Kar Zubiena, M.D., Ph.D., and Robert A. Koepp, Ph.D., University of Michigan

Our laboratory has utilized both electroencephalographic (EEG), and positron emission tomography (PET) with regional cerebral blood flow (rCBF) measurements to study the brain effects of tobacco smoking. Adult volunteers of both genders were studied before and after smoking the first cigarette of the day. A total of 14 subjects were recruited for the EEG study and 18 for the rCBF PET study. The EEG study generated mean absolute power maps with quadratic interpolation of delta, theta, alpha1, alpha2, beta1 and beta2 activity. The PET study involved 15O labeled water for normalized rCBF. After smoking a favorite cigarette, there was a statistically significant mean increase in alpha2 activity, predominantly in the occipital scalp region. Activation was observed in nucleus accumbens and parietal lobe when comparing smoking to neutral cue responses in the lexical experiment. Craving and withdrawal symptoms increased during both experiments. No activation was observed in the non-smoker. Conclusions: In nicotine-deprived smokers, smoking related pictorial cues activated brain regions involved in reward processing, working memory, and visual-spatial attention and in response to lexical cues activation was seen in reward and receptive word processing centers. These results are consistent with activation patterns observed with other drugs of abuse and with prevailing theories of nicotine addiction. Work continues in comparing nicotine-satiated and abstinent states to better understand the reinforcing properties of nicotine.

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DAILY SMOKING, QUIT ATTEMPTS, DEPENDENCE, AND EXPECTANCIES AMONG ADOLESCENTS AND YOUNG ADULTS WITH AND WITHOUT CHILDHOOD ADHD.

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Childhood Attention-Deficit/Hyperactivity Disorder (ADHD) has been demonstrated to be a risk factor for cigarette smoking among youth. However, little is known about the characteristics of nicotine addiction among these youth, especially as they progress through the adolescent and young adult developmental periods. In the Pittsburgh ADHD Longitudinal Study (AA11873; DA12414) we are following 350+ individuals with childhood ADHD through their adolescent and young adulthood ages, as well as 240 demographically similar individuals without childhood ADHD, to examine childhood ADHD as a risk factor for alcoholism and abuse of other substances. For this poster, we will present our findings of higher rates of daily cigarette smoking among the probands (ADHD) compared to controls (nonADHD), higher proportion of probands in adolescence who newly initiate daily smoking relative to same-aged controls, and a significantly greater number of attempts to quit smoking in the probands versus controls. In addition, we found that proportionately more proband smokers reported difficulty with cravings and with concentration during smoking-free periods. These findings confirm, using prospective data, the significantly elevated risk for cigarette smoking among youth with diagnosed childhood ADHD, and intractable nature of addiction to nicotine in this population. Failure to find ADHD group differences in nicotine dependence symptoms (Nicotine Dependence Syndrome Scale) and in outcome expectancies for smoking cigarettes will be discussed, including discussion of the methodological difficulties inherent in research with this population.

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POs2-101  
**HEIGHTENED ANTIDEPRESSANT EFFECT OF NICOTINE AMONG IMPULSIVE SMOKERS**

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**BACKGROUND:** Drug users high in impulsivity are known to exhibit heightened appetitive motivation to use drugs. Increased motivation to relieve negative moods is also suggested by findings that drug use in conjunction with negative affect (Cooper et al., 2000; Hussong & Chassin, 1994) and expectations about distress relief (Cooper et al., 2000; Mann et al., 1987) covary with impulsivity. We hypothesized that more impulsive smokers would derive greater mood benefits from nicotine than would other smokers. **METHOD:** Seventy regular smokers (51% female) participated in two experimental trials during which they smoked a denicotinized or a nicotinized cigarette after being induced into a negative mood via music and autobiographical memory. **RESULTS:** Mixed linear modeling of POMS depression ratings, controlling for cigarette taste and harshness, indicated a significant time x condition x impulsivity interaction [f (132) = 2.68, p = .008]. Simple effects indicated a significant time x condition interaction among highly impulsive participants [f (73) = -2.05, p = .044] but not among less impulsive participants. Among impulsive smokers, smoking a nicotinized cigarette reduced depression more than smoking a placebo cigarette, whereas no difference was found for less impulsive smokers. Impulsive smokers appear to derive disproportionately greater mood benefit from nicotine self-administration than do their less impulsive peers. Findings suggest that a capacity to attain heightened relief from depressed mood via smoking is a plausible “hook” that may bind impulsive smokers especially strongly to their cigarettes.

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POs2-102  
**SCHIZOPHRENIC VS. NON-Psychiatric Smokers: Effects of Abstinence and Nicotine Replacement on Smoking Urges and Topography**

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Mechanisms underlying smoking among schizophrenics are largely unknown. In this study we are comparing the effects of abstinence and nicotine replacement on smoking urges and topography in smokers with schizophrenia (SCZ) and non-psychiatric controls matched on gender and daily smoking rate (CON). Subjects complete 8 sessions: 2 while non-abstinent and wearing 0-mg patches and 6 while 5-h abstinent and wearing 0-, 21- or 42-mg patches. Results from 10 SCZ and 18 CON indicate that, when non-abstinent, SCZ and CON have similar urge levels, but SCZ smoke more cigarettes, take more puffs per cigarette, and have shorter inter-puff-intervals than CON (cigs/session: 4.1 +/- 0.5 vs. 2.4 +/- 0.2; puffs/cig: 13.7 +/- 2.0 vs. 9.0 +/- 0.5). Impulsiveness (Scallon et al., 1997) contributes to these differences. Abstinence increases urges and withdrawal symptoms in both groups (p<0.05), while no difference was found for less impulsive smokers. Impulsive smokers appear to derive disproportionately greater mood benefit from nicotine self-administration than do their less impulsive peers. Findings suggest that a capacity to attain heightened relief from depressed mood via smoking is a plausible “hook” that may bind impulsive smokers especially strongly to their cigarettes.

**Supported by a VA Merit grant to Bonnie Spring and DA14144 to Jessica Werth Cook**

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POs2-103  
**COMPARISON OF DEPRESSED AND NON-DEPRESSED SMOKERS RESPONSES TO CIGARETTE SMOKING**

Debra Malpass, BSc*, and Suzanne Higgs, PhD. University of Birmingham, UK

The aim of this study was to characterise the subjective, cardiovascular and psychomotor responses of depressed smokers while smoking three cigarettes at half-hourly intervals. Participants were smokers with a current diagnosis of depression (N=13) and matched control smokers without current or previous mental health problems. The participants completed a craving questionnaire, a mood scale and a simple reaction time test before and after each cigarette. Carbon monoxide levels, heart rate and blood pressure were also measured. Analysis of variance showed that overall, depressed smokers were more anxious, ashamed, confused, depressed, jittery, pessimistic and uncertain than controls. All smokers reported feeling significantly more cheerful, friendly and relaxed after smoking a cigarette. Feelings of calmness, cheerfulness, confidence and friendliness increased following each of the three cigarettes in all smokers. An interaction demonstrated that depressed smokers felt drowsier following initial cigarettes whereas controls experienced increased drowsiness following cigarettes 2 and 3. There were no differences between depressed and non-depressed smokers for craving. Depressed smokers had slower overall reaction times (p<0.05) but demonstrated a significant improvement in reaction time performance following cigarette consumption (p<0.05) relative to controls. All smokers demonstrated increased heart rate after smoking a cigarette (p<0.001). There were no significant effects on blood pressure. These results suggest that depressed smokers may smoke to improve some aspects of positive affect and decrease psychomotor retardation.

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POs2-104  
**EVIDENCE FOR SHARED GENETIC RISK BETWEEN DEPRESSIVE SYMPTOMS AND SMOKING EXPERIMENTATION IN MEN**

Christina N. Lessov*, PhD, Neal L. Benowitz, MD, Gary E. Swan, PhD

Cigarette smokers, relative to non-smokers, report higher levels of depressive symptomatology (Center for Epidemiologic Studies Depression Scale, CES-D). Studies show greater support for shared etiology versus a causal relationship as the underlying mechanism of this association. In a sample of adult (18-66 years old) Northern California female and male twins and their siblings (n=290), we explored the relationship between CES-D symptoms and cigarette smoking (experimentation, current, FTND, cigarette quantity), whether it may be in part explained by shared familial factors, and whether it differs across gender. The CES-D was treated as a count variable and smoking experimentation as a binary variable. **RESULTS:** We found significant association between CES-D and smoking experimentation (beta=0.23, p<0.01), controlling for age, smoking rates, cigarette quantity, and FTND. We also found significant association between CES-D and cigarette experimentation (beta=0.14, p<0.05), controlling for age, smoking rates, cigarette quantity, and FTND. **CONCLUSION:** Our findings suggest that there is a significant association between depressive symptoms and smoking experimentation, particularly in men, that may in part be due to common genetic determinants.

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POS2-105
ACCEPTANCE OF NICOTINE DEPENDENCE TREATMENT IN A PSYCHIATRIC OUTPATIENT CLINIC: SMOKERS WITH DEPRESSIVE DISORDERS

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This study reports on predictors of smoking treatment acceptance among currently depressed smokers assigned to an experimental intervention condition within a randomized study (N = 154). All participants received a stage-based expert system intervention for smoking cessation and were offered additional behavioral counseling, nicotine patch, and bupropion. Treatment non-acceptors (n = 101) participated in the expert system but did not go on for further smoking treatment, whereas acceptors (n = 53) actively participated in additional smoking cessation treatment. The sample was 68% female, 72% Caucasian, with a mean age of 41.4 years, and an average smoking rate of 17 cigarettes/day. No differences emerged between acceptors and non-acceptors on demographics, smoking variables, or depressive symptomatology. Acceptors were more likely to have a goal of lifetime abstinence from smoking (47% vs. 30%), a greater desire to quit smoking, and higher perceived success for quitting than non-acceptors. Treatment acceptors were also further along on the stages of change continuum (33% vs. 22% in preparation), had greater use of behavioral and experiential processes, and were more likely to be taking psychiatric medication (45% vs. 68%) than refusers. Among treatment acceptors, the median time to treatment acceptance was 56 days. Survival analysis showed desire to quit and perceived success for quitting were predictive of time (days) until treatment acceptance among those who accepted treatment. Findings have implications for the psychiatric assessment and treatment of depressed smokers in clinical settings.

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POS2-106
SMOKELESS TOBACCO AND DEPRESSION

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Background: Numerous studies have shown that cigarette smoking and subsequent nicotine addiction are associated with depression. However, the relationship between smokeless tobacco use and depression has not been well studied. The specific aim of this study was to determine whether smokeless tobacco use was associated with depression. Methods: This case control study used 1997 data from the National Household Study on Drug Abuse (NHSDA) (N=16,571). Users and non-users of smokeless tobacco were compared in terms of their depression scores controlling for demographic variables, smoking, marijuana use, and anxiety disorder. Results: Of the respondents, 18.2% used smokeless tobacco in their lifetime, 4.7% had used it in the past year, and 3.4% had used it in the past month. Lifetime use of smokeless tobacco increased the odds of depression (O.R.=1.59), as did cigarette smoking (O.R.=1.43) and marijuana use (1.75). Other control variables associated with depression included being male, younger, non-White, divorced or widowed, disabled and having generalized anxiety disorder. Conclusions: Similar to smoking, use of smokeless tobacco is associated with depression. Even though marijuana does not contain nicotine (as do tobacco products), smoking marijuana is also associated with depression suggesting that all three of these behaviors may be a form of self-medication for depression. Treating depression may assist tobacco and marijuana users with cessation efforts.

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POS2-107
SMOKING AND DEPRESSION IN THE WISCONSIN CLASS OF 1957

Eric Johnson* and Naomi Breslau

An association between cigarette smoking and depression has become expected in the field of tobacco research. However, Murphy et al. (2003) have reported findings suggesting that the association has developed since tobacco use began to decline in the late 1960s. To test the hypothesis that this association is absent when the rates of smoking are high in the population, we examined data from the Wisconsin Longitudinal Study of the class of 1957. The WLS is a study of a random sample of 10,317 men and women who graduated from Wisconsin high schools in 1957 followed up in 1964, 1975, 1977, 1992. Of the 8,493 cohort members surveyed in 1992, 6,636 were randomly selected for assessment of their lifetime history of major depression and cigarette smoking. In this cohort 54.5% were regular smokers and 10.7% had major depression. Regular smoking was significantly associated with depression (OR = 1.47 95% CI 1.21–1.78). Despite the significantly lower prevalence of smoking among women (48.4%) than men (61.4%) (p<0.05), the association between regular smoking and depression was not greater among women (OR = 1.44, 95% CI 1.15–1.80) than men (OR = 1.55, 95% CI 1.08–2.22). We also found no difference in this association between smokers who had quit (OR = 1.38, 95% CI 1.11–1.70) and current smokers (OR = 1.65, 95% CI 1.28–2.12). These results do not support the hypothesis that the association between regular smoking and depression emerges when the rates of smoking are low in a population. Finding no difference in the odds of depression between smokers who quit and those who did not, suggests that the smokers that “remain” may not be more likely to smoke as “self medication” for their depression.

No Funding

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POS2-108
COMPARISON OF MOOD SYMPTOMS DURING ACUTE TOBACCO ABSTINENCE IN SMOKERS WITH AND WITHOUT SUB-ACUTE DEPRESSION

Amanda McFetridge*, Thomas Liss, Boris Meandzija, M.D., Yale University, Judith L. Cooney, PhD., University of Connecticut & Suchitra Krishnan-Sarin, Ph.D., Yale University

Previous studies suggest that smokers with a history of major depression have both a greater difficulty quitting smoking and are at increased risk of experiencing depression and/or depressive symptoms when they quit smoking. Covey et al. (1998) found that this vulnerability may be somewhat delayed, appearing from weeks to months after cessation. This study prospectively examined smokers with and without baseline sub-acute depressive symptoms, but without clinical diagnosis of depression, to determine if changes in mood occur over the first 8 days of biochemically verified abstinence. Subjects were categorized into depressed (n=22) or non-depressed (n=38) groups based on CES-D scores. To assess mood, the Profile of Mood States (POMS; McNair, 1992) was completed daily. A series of 2 x 2 (group x time) ANOVAs were conducted on the POMS subscales. Mood states of anger and vigor were not significantly affected by group but displayed similar increases across time. A main effect for group and interaction effects between groups and time of abstinence were found on the confusion, depression, fatigue and tension subscales (p’s <.05); smokers with depressive symptoms at baseline endorsed greater levels of these symptoms. Further graphical examination of the data indicated that smokers with depressive symptoms experienced improvements in depression, confusion, fatigue and tension scores over the abstinence period when compared to baseline ratings. Our findings indicate that smokers who endorse depressive symptoms when smoking may experience an improvement in certain mood states during acute abstinence from cigarettes.

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POS2-109  
SMOKING CESSATION FOR THE CHRONICALLY MENTALLY ILL: A PILOT PROGRAM

Judith S. Gordon, PhD*, Edward Lichtenstein, PhD, Jocelyn W. Bonner, MD, Elizabeth Churchill, PMHNP, Kristi Klein, PhD

Background: The prevalence of tobacco use among the chronically mentally ill is far higher than that of the general population. Mental health practitioners have a unique opportunity to assist their patients in quitting. At the request of clinic staff, we sought to develop and evaluate a tobacco cessation protocol in one mental health clinic in Eugene, Oregon. Method: Forty-five current smokers consented to participate. Ninety percent of patients received brief cessation counseling, 74% were given NRT, 74% received brochures about quitting, 88% were referred to the Quit Line, 46% set a quit date, 22% were given bupropion, and 4% received an extra follow-up by phone from their counselor. At practitioner visits, quit status, the number of cigarettes they were smoking, and cessation aids given were recorded. Follow-up data were available for 38 smokers. The time between participants’ enrollment visit and the final visit for which follow-up data were recorded ranged from 1 to 10 months, with a mean of 5 months. Results: The average number of cigarettes smoked per day at enrollment was 13.5. At follow up this number had dropped to 9.2. This marked a significant drop in the number of cigarettes participants smoked daily, (31)=4.01, p<.001. Sixteen patients quit at some point during the study; however relapse was quite common. Only five (13.2%) had quit smoking at follow up. Two cessation aids were significantly associated with quitting at follow up: the use of bupropion (chi-square(1, n=42)=5.15, p=.023) and receipt of an extra follow-up contact by phone (chi-square(1, n=42)=10.50, p=.001). Conclusions: Although this was a small-scale pilot project, the intervention was feasible and the results appear promising.

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POS2-110  
MENTAL ILLNESS IN SMOKING VETERANS

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Tobacco use, a leading cause of preventable morbidity and mortality, is of particular concern in veterans, who have higher rates of smoking compared to the U.S. adult population. The Large Health Survey of Veterans (1999) found 29% higher rates of ever smoking and 43% higher rates of current smoking in age and sex standardized comparisons. Co-morbid mental illness in veterans may be a significant contributor to higher smoking rates, despite data showing 60% of veterans made at least one quit attempt within the past year, nearly twice the national average. Studies have shown an association between tobacco use and depression, and patients with psychosocial or schizophrenia appear to have the highest smoking rates. Separate databases from the Behavioral Health Clinic (BHC) (n=6121) and Stop Smoking Clinic (SSC) (n=3626) at the LLVAMC were crossmatched, and 732 patients, 96% (718) male and 2% (15) female, were evaluated at both clinics. Nearly 50% of the veterans enrolled in the SSC screened positive for depressive symptoms (CESD). The BHC evaluated 20.2% of veterans from the SSC. The primary diagnoses were: alcohol or other chemical dependency 23.0% (168), Post Traumatic Stress Disorder (PTSD) 22.5% (165), Major Depressive Disorder or Depressive Disorder Not Otherwise Specified 21.9% (160), Schizophrenia or Schizo-affective disorder 9.0% (66), Bipolar Disorder 5.2% (38), and other behavioral health diagnosis 18.4% (135). Because of the high burden of tobacco-related and mental illnesses (reported as 40%) in the veteran population, providers should screen for mental illness during treatment for tobacco dependence. Veterans with depression, PTSD, or chemical dependency should be jointly managed with behavioral health providers to avoid psychiatric complications of nicotine abstinence and drug interactions with bupropion.

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POS2-111  
SMOKING, SMOKING CESSATION, AND MENTAL HEALTH: INTERACTIONS IMPACT WORKER PRODUCTIVITY

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A number of studies have found that mental illness and smoking are highly correlated. Additionally, both have been shown to have a negative impact on measures of workplace productivity. However, research has not carefully considered the combined effects of smoking and mental illness on labor market outcomes. Using data from the 1996/7 and 1998/9 waves of the Community Tracking Survey (CTS), we empirically analyze the dynamic relationship between mental health and smoking and the impact of both on working, hours worked, and wages. The CTS is a biennial, nationally representative survey of about 60,000 individuals. It includes information on demographics, labor market, health status, and smoking history. We restrict our sample to those aged 18-65 years old to focus on those of prime working age. We find descriptive evidence, confirming earlier studies, suggesting that smoking is associated with worse mental health outcomes. Our further analyses suggest that the mental health of smokers who quit rises as time since quit lengthens. Finally, we provide evidence suggesting that smoking and mental health interact in important ways in their combined effects on working, hours worked, and wages. Given that mental illness tends to negatively affect labor market outcomes, this research suggests that smoking cessation programs may increase labor force participation and productivity, as mental health improves due to cessation. Thus there may be additional gains to employers in supporting smoking cessation programs.

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POS3-002

LARGE COMMUNITY SURVEY ON WATER-PIPE SMOKING

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A survey of 6706 adult persons (18 years and above) living in 6 rural villages in Egypt was carried out to study water-pipe (Shishas/Goza) use. Among adults, 7.7% population ever smoked water-pipe. The prevalence was higher among males (14.7% vs 0.9% for females). Current water-pipe smokers constituted 9.6% of all males while only 0.1% of the females were current water-pipe smokers. The majority (67.2%) prefer to smoke water-pipe because they consider it less harmful than cigarettes. Younger adults smoked significantly less water-pipe than older adults. Among the youth (12-17 years), 2.2% of males and 0.1% of females have ever tried water-pipe smoking and only 0.6% of males and none of the females are current Water-pipe smokers. The median age of initiation among adult current water-pipe smokers was 20 years. It was found to be much higher than the median age of initiation smoking cigarettes (16 years). The median age of water-pipe smoking initiation among youth was 15 years, which is also higher than the median age of initiation of cigarettes smoking (14 years) among the same group. Adults smoked significantly less water-pipe in the village sample compared to water-pipe cafés patrons in urban Cairo. Over 90% percentage of water-pipe smokers owned water-pipe equipment at home in the villages.

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POS3-003

SHEESHA (WATERPIPE) SMOKING AMONG AMERICAN MILITARY RECRUITS

Kenneth D. Ward, Ph.D. (*) Mark W. Vander Weg, Ph.D., George Relyea, MA, MS, Margaret Debon, Ph.D., & Robert C. Kiesges, Ph.D., University of Memphis and Syrian Center for Tobacco Studies

The prevalence of sheesha or water-pipe smoking, a traditional Middle Eastern tobacco use method, has increased dramatically among Arab adolescents and young adults. Anecdotally evidence also suggests that usage is on the rise among young people in the U.S. but epidemiological data are lacking. We examined the prevalence and correlates of sheesha use among US. Air Force recruits (n = 20,673; mean age = 20.0 years; range = 17-35) during the year following Basic Military Training (BMT). Sheesha use was reported by 0.3% (n = 59) of recruits and was unrelated to age, gender, ethnicity, or family income. Sheesha users were more likely than both never-users and recruits who smoked cigarettes only to believe that switching from cigarettes to other tobacco products reduces smoking-related health risks (p-values <.002). Multivariate (logistic regression) analyses revealed several factors related independently to use of sheesha: education beyond high school (odds ratio and 95% confidence interval [OR] = 1.9, 1.1 - 3.4), experimental use of cigarettes before BMT (OR = 2.0, 1.1 - 3.5), current cigarette use (OR = 2.2, 1.1 - 4.2), and current use of other tobacco products (OR = 13.6, 6.6 - 28.8). Several factors distinguished sheesha users from users of cigarettes only, including education beyond high school (OR = 1.7, 1.0 - 3.0), and both regular (OR = 2.7, 1.6 - 4.6) and experimental (OR = 1.8, 1.0 - 3.1) use of tobacco products other than cigarettes prior to BMT. Military tobacco prevention programs should include education regarding sheesha.

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POS3-004  PREVALENCE AND CORRELATES OF SMOKELESS TOBACCO USE AMONG FEMALE MILITARY RECRUITS.

Mark W. Vander Weg, Ph.D.*1, Margaret DeBon, Ph.D.2, Robert C. Klesges, Ph.D.1, Alan L. Peterson, Ph.D.3, Deborah Sherrell-Mittman, M.S.1, & George E. Relyea, M.S.1, 1University of Memphis Center for Community Health, 2University of Tennessee Health Science Centers, and 3Balch and Young Medical Center.

Smokeless tobacco (SLT) use is associated with increased risk for oral cancer, leukoplakia, gingival recession, and nicotine addiction. Although considerable research has been conducted on SLT use in males, much less is known about characteristics of female SLT users. This study examined the prevalence and correlates of SLT use among female Air Force recruits (N = 9007). Participants were surveyed regarding their history of tobacco use and other health risk behaviors during Basic Military Training. Although the prevalence of current SLT use was lower (< 1%; n = 34), 6.5% (n = 599) had tried SLT. Multivariate logistic regression analysis indicated that lifetime SLT use was related to ethnicity, with Native Americans (17.7%) and Whites (10.2%) being most likely to have tried SLT. Additional correlates of SLT use included having household education (Odds Ratio [OR] and 95% CI = 1.26, 1.03-1.55), weekly acts of road rage (OR = 1.48, 1.06-2.06), and frequent arguing (OR = 1.71, 1.18-2.48), daily or near daily alcohol consumption (OR = 1.71, 1.03-2.82), and smoking cigarettes (OR = 3.80, 2.42-5.94), and experimental use of cigars (OR = 4.01, 3.22-5.01), pipes (OR = 2.23, 1.64-3.03), and clove cigarettes (OR = 1.23, 1.01-1.49). Results suggest that female recruits who have used SLT engage in a variety of risk behaviors including use of other tobacco products and additional harmful behaviors.

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POS3-005  CIGAR, PIPE, AND SMOKELESS TOBACCO USE AMONG UNITED STATES AIR FORCE GUARDS AND RESERVISTS

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Despite the Department of Defense’s Tobacco Use Prevention Strategic Plan, tobacco use in the armed services remains high. While the majority of the research on tobacco use in the military has focused on cigarette smoking, the use of other types of tobacco is also of concern. The cost of tobacco use remains a significant problem, not only by reducing military readiness but also by diverting funds away from equipment, training, and additional personnel. Considering that no previously published research studies have described tobacco use in guards and reservists, we conducted two studies to determine the trends in smokeless tobacco use in two cohorts of United States Air Force (AF-I and AF-II) reservists and guards. Guards (G) and reservists (R) were surveyed in 1995-1996 (n: G=2,323; R=777) and 1999-2000 (n: G=3,633; R=1,269). This report focuses on the rates and types of tobacco (smokeless, cigar, pipe, clove cigarettes, and bidis) use as well as the predictors of tobacco use. The percentage of airmen who never used smokeless tobacco (SLT) decreased significantly from AF-I (G=71.5%, R=81.3%) to AF-II (G=65.6%, R=78.6%). However regular SLT use increased significantly only for guards (AF-I: 5.0%; AF-II: 9.9%). In AF-II, guards demonstrated higher rates of both regular and experimental tobacco use relative to reservists for all types of tobacco with the exception of bidis. Logistic regression modeling for the guards and the reservists revealed different correlates of regular vs. never tobacco use. This study was supported by research grant HL053478 from NHLBI.

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POS3-006  TRENDS IN CIGARETTE USE AMONG UNITED STATES AIR FORCE GUARDS AND RESERVISTS

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Historically, the rate of cigarette smoking in the U.S. Military has been significantly higher than among civilians. Smoking is associated with significant financial costs and impacts physical readiness of active duty military personnel as well as the reserves and guards. Surprisingly, only one study has assessed smoking in the guards and reservists. Therefore, the present report provides the results from two studies (AF-I and AF-II) that were conducted to determine the trends in cigarette smoking in two cohorts of United States Air Force Reservists and Guards. Guards (G) and reservists (R) were surveyed in 1995-1996 (n: G=2,323; R=777) and 1999-2000 (n: G=3,633; R=1,269). Results indicated that guards consistently had higher percentages of regular smokers (AF-I=19.2%; AF-II=27.7%) than their reserve counterparts (AF-I=17.0%; AF-II=21.0%). In addition, a consistent cigarette smoking pattern emerged for both the guards and the reservists. That is, a significant increase in experimental (G=24.3%, R=23.4%) and regular smoking (G=19.2%, R=17.0%) from the first study to the second (Experimental: G=31.7%, R=29.6%; Regular: G=27.7%, R=21.0%) as well as a significant reduction in the number of never smokers (AF-I: G=48.4%, R=52.5%; AF-II: G=32.6%, R=40.3%). No differences in the number of former smokers were noted. While the percentage of smokers was higher in the second study, both the guards and the reservists smoked fewer cigarettes on average than their AF-I counterparts. Logistic regression modeling for the guards and the reservists revealed different correlates of regular vs. never smoking. This study was supported by research grant HL053478 from NHLBI.

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POS3-007  PREDICTIVE VALIDITY OF SUSCEPTIBILITY TO TOBACCO USE AMONG AIR FORCE RECRUITS.

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This paper investigates the internal and external validation of logistic regression prediction models for various tobacco products among Air Force recruits. We examined tobacco use among 20,673 Air Force recruits at BMT (Basic Military Training) and one year follow-up. Prediction logistic regression equations for future tobacco use were estimated using various demographic variables with either 2- or 4-level measures of susceptibility of smoking based on the scales developed by Pierce (Pierce et al., 1995). In all predictive equations, both susceptibility measures were highly significant. Internal validations were measured by bootstrap (sampling with replacement) and jackknife (one-delete) sampling techniques with associated bias measures. External validations were assessed by generating stratified random samples and calculating receiver operating characteristic (ROC) and Gini coefficients. Validation samples were generated to insure coverage of covariate (predictors) patterns in the survey population. In addition, the Hosmer-Lemeshow statistic was applied to assess overall external validation and for levels of susceptibility measures. Results indicate that for some tobacco type usage, a 4-level susceptibility measure outperforms the traditional dichotomized measure. All predictive equations were demonstrated to be internally and externally valid.

This study was supported by NHLBI grant HL053478.

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POS3-008  GENDER DIFFERENCES AMONG “HARDCORE” SMOKERS: AN ANALYSIS OF THE TOBACCO USE SUPPLEMENT OF THE CURRENT POPULATION SURVEY

Diliyara Barzani, MD, MPH*, Erik M. Augustson, PhD, MPH, Stephen Marcus, PhD

Objectives: Recent analyses have found that approximately 60% of hardcore smokers are men. However, this also indicates that a sizable proportion of hardcore smokers must be women and this group has been largely ignored in conceptualizations of hardcore smoking. Female HC were compared to male HC and to other women smokers on a variety of demographic, environmental, and smoking variables.

Methods: SUDAAN was used to analyze data from the 1998/1999 Current Population Survey Tobacco Use Supplement. Our sample consisted of 2,393 male hardcore smokers, 2,172 women hardcore smokers, and 15,543 other women smokers. Results: Compared to male HC and other female smokers, female HC had lower incomes and were less likely to be in the workforce, be a person of color, or have home restrictions on tobacco use. Male and female HC were no less likely to have attended any college. Male HC started smoking at an earlier age and smoked more cigarettes/day than female HC while the reverse was true for female HC compared to other female smokers. Conclusions: This analysis points to similarities and differences between men and women hardcore smokers, and women hardcore smokers compared to other women smokers. These differences may have important relevance to targeted interventions. These results also highlight that woman hardcore smokers represent a substantial number of smokers and, as such, may represent a significant public health issue.

Dr. Barzani is supported by a National Cancer Institute Cancer Prevention Fellowship within the Division of Cancer Prevention, Office of Preventive Oncology.

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POS3-009  ARE HIGHER SMOKING PREVALENCE RATES AMONG AFRICAN AMERICAN ADULTS LIKELY TO CONTINUE?

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Nationally, African American (AA) adult smoking prevalence has been consistently higher than Non-Hispanic Whites (WH), while adolescent prevalence has been lower. This pattern has also been observed in California. It is unclear if this prevalence difference is due to delayed AA smoking initiation, or whether older cohorts of AAs continue to smoke at much higher levels. Data from the random-digit-dialed California Tobacco Surveys from 1990-2002 were analyzed for differences in smoking prevalence in various age groups and for risk of future smoking. Among young adults (18-29), in 1990, current smoking prevalence (100+ cigarettes, now smokes some days or everyday) was no different among AAs than WHs (about 28%). However, by 1993, AA young adult smoking prevalence declined to about 15% and remained approximately 25% lower than WHs through 2002. Among AAs ages 30+ in 2002, prevalence was more than 25% higher than WHs. Further, analysis of young adults at risk for future smoking failed to indicate that AAs would have a higher rate of smoking as older adults. Specifically, AAs and WHs were similarly distributed among susceptible never smokers (3% each), while AAs were lower than WHs among experimenters who had smoked a cigarette in the last year (44% vs. 50%) and former established smokers at risk for relapse (52% vs. 63%). We conclude that the lower smoking rates among AA youth will be reflected in lower adult prevalence in future surveys, and that this generation of AAs might escape the high levels of smoking seen among older generations.

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POS3-010  PILOTING A CULTURALLY COMPETENT SMOKING CESSATION PROGRAM FOR AFRICAN-AMERICAN SMOKERS

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Research shows that while African-American smokers have more annual quit attempts than Caucasian smokers, quit rates are lower. Unfortunately, few programs have been tailored for African-Americans. This study piloted a culturally competent intervention for underserved African-American smokers and provided initial acceptability/outcome results compared to a treatment-as-usual program. Participants were randomized to condition (9 groups with usual treatment, n=59; 1 pilot group with tailored treatment, n=8), and received 6 group sessions by a Master’s clinician (King & Riley, 2001) and one month of free nicotine patch. Treatment-as-usual groups incorporated cognitive-behavioral, motivational, and twelve-step components. The tailored group added modules using imagery of African-Americans, unique health consequences, prayer and the African-American church, and community-specific statistics. The sample was 100% African-American (61 females, 6 males), averaged 14 cigs/day for 22 years, and 76% smoked menthalated cigarettes. ANOVA results from the program response questionnaire revealed the tailored group had significantly higher ratings on the program targeting issues “specific to African-Americans” [F(1,14)=19.30, p<.0005] and being “a really good fit” [F(1,14)=5.52, p<.05] compared to the usual group. Overall program completion rates were favorable, yet comparatively better in the tailored vs. usual group (100% vs 78%). The former showed better patch compliance (88% vs 45%) and point-prevalence quit rates at 3 months (50% vs. 24%), however, 6-month quit rates did not differ between conditions (25% vs. 20%). Results suggest improved compliance and initial outcome for underserved African-Americans within a culturally tailored program.

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POS3-011  CULTURAL TAILORING OF SMOKING INTERVENTIONS: QUALITATIVE FINDINGS.

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Cultural heterogeneity is inherent in the Latino population and must be considered when designing interventions. Few culturally tailored tobacco cessation interventions have been developed for Latinos, particularly those of non-Mexican descent. Focus groups were conducted with Latinos from the community to better understand the important elements of culturally tailored interventions, learn about their experiences and motivation around quitting. Recruitment was conducted through community contacts, neighborhood hospitals and community centers. Participants included 30 Latinos (58% female). The ethnic distribution was 33% Dominican, 30% Puerto Rican, 25% Colombian and 11% Guatemalan. Focus group discussions explored questions including: What meaning does tobacco have for you?; What meaning does quitting smoking have among Latinos?; What would help you consider quitting?; What characteristics would you prefer in cessation counselors? Responses were audiotaped. Facilitators developed executive summaries noting responses to a priori research questions and themes that emerged during group interactions. Results were compared across groups and common themes were explored. Most participants reported smoking due to feeling lonely, anxious or depressed. Most participants wanted a variety of NRT options, all wanted support groups available as part of the treatment. A Latino counselor was preferred by all participants of Dominican, Puerto Rican & Guatemalan descent, however, most Colombians were indifferent, as long as the counselor spoke Spanish. Women thought it was difficult to approach men regarding their smoking, however, men did not feel hesitant approaching women. Many men thought women looked unglamorous when women at n't feel this way about men. The results of these focus groups are assisting investigators in designing a culturally tailored smoking cessation intervention for Latinos.

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POS3-012
SMOKING CESSATION AMONG HISPANIC SMOKER: ¡ADIOS AL FUMAR!
Judy Snider M.Sc.*, Anne Zaborski B.A., Murray J. Kaiserman Ph.D. M.B.A.
1= The University of Texas M.D. Anderson Cancer Center 2 = National Cancer Institute Cancer Information Service

¡Adios al Fumarr is a randomized clinical trial evaluating the efficacy of delivering an enhanced smoking cessation counseling program to smokers who call the National Cancer Institute’s Cancer Information Service (CIS) requesting help in Spanish. Participants are randomized to either a single, standard CIS counseling call (SC) or to the single CIS call plus 3 additional proactive calls (EC). All assessment and counseling calls were delivered in Spanish. Of 225 total participants (86% participation rate), 131 have completed the 12 week follow-up (85% follow-up rate). Among EC participants, 96% received at least 3 of the 4 counseling calls. The sample is 67% male, 90% are immigrants (70% of Mexican origin), 50% speak only Spanish in the home, mean age is 41, cigarettes/day are 10, Fagerstrom score is 7, and 48% have scores on the CES-D indicating probable depression (>22). The sample is of low socioeconomic status. Over 50% have total annual household incomes <$20,000, 70% have no insurance, and mean years of education is 11. Abstinence rates are 24.1% for EC and 14.5% for SC at week 12 (nonsignificant). Women and immigrants are significantly less likely to quit smoking. The Adios project has recruited a very underserved, low SES, Spanish speaking population who have no or few alternatives for receiving health care; successfully followed up 85% of those individuals; delivered at least 75% of the treatment dose to 96% of EC participants; and demonstrated that the EC intervention is promising. Data on the full sample of 225 participants will be presented at the meeting.

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POS3-013
CESSATION: WHAT DO CANADIAN SMOKERS DO TO QUIT
Judy Snider M.Sc.*, Anne Zaborski B.A., Murray J. Kaiserman Ph.D. M.B.A.

In Canada, according to data collected in 2002 by the Canadian Tobacco Monitoring Survey (CTUMS), an ongoing national survey of over 20,000 Canadians, there are now more former smokers (25%) than current smokers (21%). On average, smokers consume fewer cigarettes per day (16) than in the past. Twenty-five percent of daily smokers report having their first cigarette within 5 minutes of waking and another 34% report the time as 6-30 minutes. Twenty percent of smokers indicate they have no intention to quit within the next 6 months. Overall, 55% of daily smokers report no quit attempts in the past 12 months, however, among former smokers they have no intention to quit within the next 6 months. Among EC participants, 96% received at least 3 of the 4 counseling calls. The Adios project has recruited a very underserved, low SES, Spanish speaking population who have no or few alternatives for receiving health care; successfully followed up 85% of those individuals; delivered at least 75% of the treatment dose to 96% of EC participants; and demonstrated that the EC intervention is promising. Data on the full sample of 225 participants will be presented at the meeting.

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POS3-014
INTERVENTION TO REDUCE SMOKING AMONG PRISONERS: 6 MONTH FEASIBILITY STUDY
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Background 12,000 individuals enter the NSW correctional system annually. Prisons house disadvantaged populations and indigenous people are over-represented. Prisoners’ smoking rates are significantly higher than the general population (78% vs 23%). Aim To conduct a feasibility study to reduce smoking among male prisoners. Method Study was conducted in a NSW maximum security prison. Stage 1: cross sectional survey (80 prisoners); Stage 2: 3 focus groups among Indigenous and non-Indigenous prisoners. Stage 3: 30 prisoners (50% Indigenous) participated in 2 brief cognitive behavioral therapy sessions, combined pharmacotherapies (nicotine patch and bupropion) and received self-help booklets. Results Demographics: mean age 32 years; 54% institutionalized in childhood; 71% had used cannabis in prison; 36% heroin and 15% cocaine; 47% had ever injected drugs. Focus groups yielded information about tobacco use in prison: used to regulate stress of prison life and as a form of currency for gambling, food and clothing. 6-month results: point prevalence was 26% with higher prevalence among non-Indigenous prisoners (43% vs 8%); continuous abstinence was 22% with higher abstinence among non-Indigenous (36% vs 8%). Reasons for success include: not being transferred to other prisons (Indigenous were twice as likely); not sharing a cell with a smoker, not a regular cannabis user before entering prison. Conclusion Prisoners were keen to participate in the smoking cessation program and contributed to the development of the intervention. Abstinence rates were high particularly among those not transferred to other prisons. Results were encouraging among this group with a high level of drug use.

NHF, NSW Dept of Health, NSW Cancer Council.
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POS3-015
GOOD INTENTIONS BUT BAD RESOURCES FOR QUITTING SMOKING IN PRISON

While it is estimated that up to 80% of prisoners smoke cigarettes, few studies describe the smoking behavior of prisoners, particularly women. This study was part of a larger project designed to describe the smoking behavior of incarcerated women. 132 female prisoners were asked about their smoking behavior; 66.4% self-identified as smokers, 14.4% ex-smokers, and 19.1% non-smokers. The sample was adult (M = 35.2), never been married (43.5%), Caucasian (48.9%) women with at least a high school/GED level of education (80.8%). The mean age of smoking initiation was 13.5 years, with a mean age of daily smoking of 19.9 years. The average number of cpd was 14.3 and the average heaviest use was 24.3 cpd. 97.7% of smokers reported smoking that day and the mean length of smoking was 17.5 years. Current smokers reported higher percentages of friends who smoke (M= 72.2) than did ex-smokers (M= 44.7) and non-smokers (M= 52.8) [F(2, 124) = 6.8, p = .002]. 47.5% reported having a family member with medical problems caused by smoking and 48.6% having a family member die because of a smoking-related disease. 32.2% of participants report having medical problems related to their smoking, 42.4% of women indicated that their smoking behavior has increased since coming to prison, and 15.2% started smoking since incarceration. 69% of smokers reported that they were seriously considering quitting smoking within the next 6 months, with 21.8% reporting wanting to quit in the next 30 days. Despite the medical problems and the high interest in quitting, few prisoners have access to smoking cessation treatment while in prison. Research on smoking cessation treatment is drastically needed for this neglected and underserved population.

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POS3-016  NICOTINE DEPENDENCE, MOTIVATION TO QUIT, AND DIAGNOSIS IN EMERGENCY DEPARTMENT PATIENTS WHO SMOKE

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Introduction: Recent studies have shown that emergency department (ED) patients with chest pain or respiratory problems are interested in tobacco cessation. It is unknown whether patients in the ED with non-tobacco-related conditions are also interested in quitting. Methods: A convenience sample survey of adult patients visiting 2 busy, urban emergency departments in 2 cities from May-September, 2003. Patients were asked about smoking status; smokers were asked additional items, including a Fagerstrom Test for Nicotine Dependence and the Ladder of Contemplation. IC9D codes and disposition status were recorded for all patients. Smoking-related diagnoses were drawn from the 1989 Surgeon General’s report. Data were analyzed with descriptive statistics and Wilcoxon-Mann-Whitney tests as appropriate using SPSS 10.0. A p value of <.05 was considered significant. Results: 423 patients were interviewed, median age 42 (interquartile range 29-50); 223% (54.1%) were female. 95% of all patients were African-American or Hispanic; 70% were uninsured or had Medicaid. Of all patients, 17% were admitted. Of the 50 patients with smoking-related diagnoses, the median Fagerstrom score was 5 (IQ 4-6), compared to 4 (IQ 3-6) for patients with a non-smoking-related diagnosis (p = 0.09). Patients with smoking-related and non-smoking-related diagnoses were equally motivated to quit, as measured by the Ladder of Contemplation score (both 6, IQ 3-7, p = 0.71). Conclusion: Adult ED smokers exhibit moderate levels of nicotine addiction and interest in quitting. ED-based tobacco cessation efforts should target smokers with both tobacco-related and non-tobacco-related causes for visits. Supported by Grant 2454 from the American Legacy Foundation

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POS3-017  NICOTINE DEPENDENCE AND REASONS FOR SMOKING ACROSS GENDER IN CAUCASIAN AND AFRICAN-AMERICAN SAMPLES

Jennie Z. Ma, Ming D. Li*, The University of Texas Health Science Center at San Antonio; Thomas J. Payne, Karen C. Crews, The University of Mississippi Medical Center.

To determine whether significant differences exist across gender and ethnic subgroups in the reasons for smoking tobacco, we studied 752 Caucasian and African-American smokers (mean age 39.5 ± 13.3; mean FTND score 6.5 ± 2.1; 64% females; 63% African-Americans) who completed the Fagerstrom Test for Nicotine Dependence (FTND) and Reasons for Smoking Questionnaire (RFSQ). Results indicate significant correlations exist between the FTND score and all individual RFSQ subscales (P<0.001): Stimulation, Indulgent, Psychosocial, Sensorimotor, Addictive, Automatic, Sedative, Pharmacological and Nonpharmacological scales. Male and female smokers responded similarly overall, with the exception of a lack of a relationship between the FTND and Sedative scale in female smokers. Further analysis by ethnic group and gender revealed correlations of substantially different magnitude across the four subpopulations on the Sedative, Indulgent, Psychosocial and Sensorimotor scales. These findings suggest the manifestation of nicotine dependence and its associated behavioral features differ across gender and ethnic subgroups. This research has implications for understanding the nature of nicotine dependence and its management.

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POS3-018  NICOTINE DEPENDENCE AMONG AFRICAN AMERICAN LIGHT SMOKERS

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Although the overall prevalence of cigarette smoking in the United States is decreasing, the proportion of light smokers (less than or equal to 10 CPD) is increasing. Among African Americans (AAs) up to 50% are light smokers. Despite smoking fewer cigarettes per day (CPD) than Whites, AAs have lower cessation rates, are more likely to smoke their first cigarette of the day within 30 minutes of awakening, and experience disproportionately higher rates of tobacco-related diseases. However, light smokers are usually classified as non-dependent by commonly used measures of nicotine dependence, including the Fagerström Test of Nicotine Dependence (FTND). Alternative measures not incorporating CPD have been suggested but not tested empirically. This study examined time to first cigarette (TTF) as an alternative measure of nicotine dependence among AA light smokers enrolled in a smoking cessation study. Participants (n=189) had a mean age of 43.8 (SD=9.4) years, 67% were female, and smoked 7.4(SD=2.5) CPD. Mean FTND score for the entire sample was 2.8 (SD=1.8) out of 10 possible. 27.4% and 34.2% of participants smoke within 5 minutes and 6-30 minutes of waking respectively. Those who smoked within 5 minutes smoked 8.3 (SD=2.4) CPD and had a mean FTND score of 4.8 (SD=1.2). Those who smoked within 6-30 minutes of awakening smoked 7.8 (SD=2.4) CPD and had a mean FTND score of 3.2 (SD=0.9). FTND was moderately correlated (r=0.39) with CPD. Findings suggest that despite being classified as having low dependence by the FTND, over 50% of AA light smokers smoke their first cigarette within 30 minutes of awakening. TTF should be considered as an alternative measure of nicotine dependence among AA light smokers. Supported by NCI #R01CA91912.

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POS3-019  VALIDATING A MULTI-DIMENSIONAL MEASURE OF TOBACCO DEPENDENCE AMONG SPANISH-SPEAKING SMOKERS

Carlos A. Mazas(*), Patricia Daza, Lynne Nguyen, Luz Mejia, AND David Wetter.

Most measures of tobacco dependence are based on a unidimensional model of dependence (e.g., physiological addiction). Conversely, the Wisconsin Inventory of Smoking Dependence Motives (WISDM-68) is a new measure that utilizes a multidimensional model of dependence and includes 13 subscales (Piper et al., in press). The current study evaluated a Spanish language version of the WISDM-68 among Spanish speaking smokers who called the National Cancer Institute’s Cancer Information Service requesting smoking cessation services in Spanish. The total sample size is 225 and preliminary data are from 131 participants who have completed the study (67% male, mean age 41, mean years of education is 11, mean cigarettes/day equals 10, mean Fagerstrom score is 7, 90% immigrate, 50% speak only Spanish at home, 50% with total annual household incomes <$20,000, 70% have no insurance, and 48% with self-report scores indicating probable depression. All 13 WISDM-68 subscales had good internal consistency (coefficient alphas from .76 to .91). WISDM-68 total scores were significantly related to other dependence measures (Fagerström Test of Nicotine Dependence, r=.24; cigarettes per day, r=.49; minutes to first cigarette, r=-.23). Moreover, four subscales prospectively predicted abstinence at 12 weeks postcessation at p < .10 (Automaticity, p=.04; Craving, p=.08; Social/Environmental Goads, p=.07; and Tolerance, p=.06). None of the typical indicators of dependence were related to abstinence. In sum, preliminary data suggest that a Spanish language version of the WISDM-68 is reliable, valid, and predicts outcome better than do typical unidimensional measures of dependence. Data on the full sample of 225 participants will be presented at the meeting.

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POS3-020
ASSESSING NICOTINE DEPENDENCE IN ADULT SMOKERS WITH THE HOOKED ON NICOTINE CHECKLIST

Robert J. Wellman, Ph.D.*, Fitchburg State College; Judith A. Savageau, M.P.H. and Joseph R. DiFranza, M.D.*, University of Massachusetts Medical School; Sameer Godiwala, University of Rochester

The Hooked On Nicotine Checklist (HONC) lists 10 symptoms of nicotine dependence, with a yes/no response to each. Scores are summed to create a total dependence score. It was developed and tested successfully with adolescents. This study explored its psychometric properties for assessing nicotine dependence in adult smokers. Subjects were adults who were observed smoking in public places. They were offered a $2.00 coupon for completing a questionnaire including the HONC, demographics, current smoking, and smoking history. The sample (N = 991) was ethnically diverse, average age was 38.9 years (SD = 12.6) and 65.6% were female. Subjects smoked an average of 30 days/month and 17 cigarettes per day. Average age of smoking initiation was 15.9 and they had smoked for an average of 21 years. Internal consistency of the HONC was high (alpha = .83), and inter-item correlations were low to moderate (r = .14-.57). HONC scores correlated moderately with self-reported failed attempts to quit smoking (r = .47, p < .001), and correlations with current and peak smoking measures, age of onset, and total years smoked were all significant, low to moderate, and in the expected directions. Total HONC scores discriminated among light (M = 4.3, SD = 3.3, n = 40), moderate (M = 6.0, SD = 2.8, n = 125) and heavy smokers (M = 7.4, SD = 2.5, n = 826) (F [2/988] = 39.70, p < .001). The HONC appears to be psychometrically sound for use with adult smokers, allowing for accurate comparisons between adolescents and adults.

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POS3-021
FACTOR STRUCTURE OF THE NICOTINE DEPENDENCE SYNDROME SCALE IN A REPRESENTATIVE U.S. SAMPLE

Brian P. Flaherty* and Saul Shiffman

The Nicotine Dependence Syndrome Scale (NDSS) is a multidimensional scale to measure nicotine dependence in smokers. Initial factor analyses suggested that it consists of five sub-scales: drive, priority, stereotypy, continuity, and tolerance. We used confirmatory factor analysis to examine the NDSS factor structure among 14,770 respondents to the 2001 National Household Survey of Substance Use. The NDSS was administered to all respondents ages 12+ who reported smoking in the past 30 days. The analyses confirmed the proposed 5-factor structure. A reasonable fit was also obtained for a structure further positing a single higher-order dependence factor that accounted for the correlations among the 5 first-level factors. We next examined whether the instrument's structure varied by age (ages 12-15, 16-17, 18-20, 21-25, 26-35, 36-49, 50+). It would be useful (e.g., for studying the development of dependence) to have a scale that could be applied across age groups. However, differences in cognitive capacity and in smoking experience could undermine age-invariance in measurement. We concluded that models including age-invariant sub-scale were acceptable. However, relations between the second order factor and the sub-scales were not invariant across the age groups. Possible reasons for this lack of invariance are discussed. The analyses show that the basic NDSS factor structure holds for a diverse, nationally-representative sample, and suggests that the NDSS can be used across a broad range of age and smoking experience, suggesting the instrument could be used to study the development of nicotine dependence.

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POS3-022
CORRELATES OF THE NICOTINE DEPENDENCE SYNDROME SCALE IN A REPRESENTATIVE U.S. SAMPLE

Brian P. Flaherty*, Saul Shiffman

The Nicotine Dependence Syndrome Scale (NDSS) is a multidimensional scale to measure nicotine dependence in smokers. It consists of five sub-scales: drive, priority, stereotypy, continuity, and tolerance. Respondents to the 2001 National Household Survey of Substance Use who indicated any smoking in the past 30 days received the NDSS (N=14,770). In other work, we have confirmed the five-factor structure of NDSS with this data. In this work, we examined the construct validity of the NDSS. We used structure equation modelling to estimate relations between relevant constructs and 1) a model of the five sub-scales (a correlated factor model) and 2) a model that posits a higher order factor that accounts for the sub-scale intercorrelations (a second order factor model). The second-order factor corresponds to a general nicotine dependence factor. Models using the correlated factor model demonstrate the construct validity of the five individual sub-scales, without controlling for the other sub-scales. The second-order model serves two purposes. First, it demonstrates the construct validity of the general dependence factor based on the NDSS sub-scales. Second, it allows one to look at the relations between the domains of theoretical interest and the first-order factor residuals (e.g., the reliable variance in the drive factor that is not accounted for by the general dependence factor). Covariates examined include demographics, indicators of cigarette consumption, and other indicators of dependence. These analyses show that the NDSS has good construct validity.

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POS3-023
VALIDITY OF RETROSPECTIVE ASSESSMENTS OF NICOTINE DEPENDENCE

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Information about levels of nicotine dependence in ex-smokers when they smoked, or in current smokers at an earlier date, is potentially useful for clinical and research purposes. To estimate the accuracy of retrospective reports of dependence, 28 individuals who completed either the Fagerström Tolerance Questionnaire (FTQ) or Fagerström Test for Nicotine Dependence (FTND) in smoking cessation trials conducted 5-12 years previously were asked to respond again to the same questions, thinking back to their smoking behavior just prior to their on-study quit attempt. Concordance for the 6 FTQ/FTND items averaged 70.7%, and kappa statistics for the individual items ranged from −0.18 (difficult to refrain from smoking in places where it is forbidden) to 0.71 (smoke when ill and in bed most of the day). The mean difference between the baseline and follow-up total scale scores was 0.05 (SD, 1.36) for the FTQ (n=20) and 0.38 (SD, 1.51) for the FTND (n=8), and the correlation coefficient between these assessments was 0.62 for the FTQ (p<0.005) and 0.72 for the FTND (p<0.05). Baseline FTQ/FTND scores, time elapsed since the first assessment, and participants' smoking status at follow-up were not associated with the mean difference in total scores between assessments. Participants' perceived confidence in the accuracy of their recall accounts for 13% of the variability in the difference score (p<0.06). These preliminary results suggest that retrospectively assessed FTQ/FTND scale scores have moderate reliability, and that participants' confidence in the accuracy of their recall might be a useful indicator of error.

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POS3-024  THE EFFECT OF SOCIAL FACTORS ON SELF-REPORT MEASURES OF PHYSICAL NICOTINE DEPENDENCY

Michael O. Chaiton*, B.A., University of Toronto

This report presents the results of a literature review of measures of physical nicotine dependence and their interaction with social factors. It has been suggested that social pressures have already convinced many less nicotine dependent smokers to stop smoking resulting in a remaining population of smokers who are highly dependent on nicotine, possibly necessitating dramatic changes in tobacco control strategies. It is important to consider if measures of physical nicotine dependence were susceptible to influence from environmental or social factors when considering the “hardening” of smoking populations. The literature review assesses the current state of knowledge regarding the effectiveness of measures of dependency as predictors of cessation, particularly in non-clinical populations. The online databases, Medline, Embase, Healthstar, and CINAHL were searched. Included studies used the Fagerstrom Tolerance Questionnaire (FTQ) or the Heaviness of Smoking Index (HSI) and related scales. Despite the characterization of self-report tests of nicotine dependence as physical, studies have demonstrated changes in nicotine dependence measures in response to environmental stimuli. The measurement of cigarettes per day as a proxy for nicotine intake may be particularly susceptible to non-biological factors. Current measures of self-report nicotine dependence should be considered in context of social, political, and other environmental factors.

Ontario Tobacco Research Unit Studentship

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POS3-025  ON THE MEASUREMENT OF NICOTINE DEPENDENCE IN ADOLESCENCE: COMPARISONS OF THE PROKHOROV MFTQ AND A DSM-IV BASED SCALE

Denise B. Kandel, Ph.D.*, Christine Schaffran, M.A., Pamela C. Griesler, Ph.D., M. Rosaria Galanti, M.D., Ph.D., Jessica Samuels, Ph.D. and Mark Davies, M.P.H.

OBJECTIVE: To identify similarities and differences in the identification of nicotine dependent smokers provided by Prokhorov's Modified Fagerstrom Tolerance Questionnaire (MFTQ) for adolescents and a DSM-IV based scale (DSM) in a multi-ethnic sample of urban adolescents. METHODS: In Spring 2003, 6th-10th grade students were sampled from a large urban school system to provide a roughly balanced sample of Whites, African-Americans and non-white Hispanics (N=15,763). Data were obtained with a short structured self-administered survey instrument. RESULTS: The two scales formed two independent factors, with low association (Kappa=2). The DSM identified a much larger number of nicotine dependent smokers than the MFTQ, mostly because it identified dependent smokers at much lower levels of cigarettes consumed than the MFTQ. A lower percentage of African Americans chose the null response in answer to the MFTQ (33%-44%) than the DSM (6%-8%). Among low-level smokers, questions endorsing daily smoking were more likely to be skipped, or to induce a re-appraisal of own smoking. Assuming that daily smoking provides an underlying model for assessing nicotine dependence may lead to the underestimation of dependence among adolescents if symptoms develop without daily smoking.

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POS3-026  PATTERNS OF NON-RESPONSE TO NICOTINE DEPENDENCE SCALES AMONG ADOLESCENTS

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Most instruments available to assess nicotine dependence among adolescents were originally designed for adult smokers in clinical settings. We analysed the patterns of responses of 107 Swedish and 538 white American adolescent lifetime smokers aged 16-17 to a slightly revised version of Prokhorov’s modified Fagerstrom Tolerance Questionnaire (MFTQ) and a DSM-IV based scale. The Americans, not the Swedes, could choose the “null” response (“I have never smoked cigarettes or I have only smoked once or twice”) to each scale item. A much higher percentage of Swedish (16%-28%) than American (1%-5%) adolescents did not answer the MFTQ items, most of which imply daily smoking. About 70% of Swedish non-responders had ever smoked fewer than 10 cigarettes; 90% never smoked as much as one cigarette per week for three months. A higher proportion of Swedes (7%-12%) than Americans (3%-7%) also failed to answer the DSM items. However, many more Americans chose the null response in answer to the MFTQ (33%-44%) than the DSM (6%-8%). Among low-level smokers, questions endorsing daily smoking were more likely to be skipped, or to induce a re-appraisal of own smoking. Assuming that daily smoking provides an underlying model for assessing nicotine dependence may lead to the underestimation of dependence among adolescents if symptoms develop without daily smoking.

This study was conducted at Robert Wood Johnson Medical School, University Behavioral Health Care – UMDNJ. No outside funding source.

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POS3-028  DIAGNOSING NICOTINE DEPENDENCE IN SMOKELESS TOBACCO USERS WITH THE MODIFIED FAGERSTROM TOLERANCE QUESTIONNAIRE AND THE DIAGNOSTIC INTERVIEW SCHEDULE, IV

Janet Thomas*, Ph.D., Christi Patten, Ph.D., Carrie Bronars, B.A., Ivana Croghan, Ph.D., Lisa Nirelli, B.S., Darrell Schroeder, M.S., Jon Ebbert, M.D., Lowell Dale, M.D., Mayo Clinic, Rochester

The Fagerstrom Tolerance Questionnaire (FTQ) and the Nicotine Dependence module of the Diagnostic Interview Schedule (DIS-IV) are two common assessment tools for nicotine dependence. This study examined the concurrent validity of the modified FTQ for smokeless tobacco (FTQ-ST) and the DIS-IV criteria for nicotine dependence in a sample of 68 (67 male) adult smokeless tobacco users enrolled in a randomized efficacy pilot study evaluating bupropion. Of the 68 subjects, 44 (65%) satisfied DSM-IV criteria for past nicotine dependence and 32 (47%) for current nicotine dependence. Mean (±SD) FTQ-ST total score was not found to differ significantly between those satisfying DSM-IV nicotine dependence criteria versus not (7.1±2.1 vs. 7.2±3.1, p=0.828, past dependence, 7.4±2.1 vs. 6.8±2.8, p=0.325, current dependence). There was no significant association between FTQ-ST total score and the number of DSM-IV symptoms of nicotine dependence (r=0.14, p=0.249). At 24-weeks follow-up, the biochemically confirmed 7-day point-prevalence abstinence rate was 29% for each treatment group. Although not statistically significant, after adjusting for treatment group, higher FTQ-ST total scores tended to be associated with a reduced likelihood of abstinence at week-24 (OR=0.86 for each unit increase; p=0.158). Similarly, those satisfying DSM-IV criteria for nicotine dependence tended to have a lower likelihood of abstinence (OR=0.55, p=0.282 and OR=0.67, p=0.453 for past and current DSM-IV criteria). Results suggest that the modified FTQ and the DSM-IV criteria may assess different aspects of nicotine dependence. Results have implications for the continued use of the DSM-IV criteria in studies examining nicotine dependence.

No Funding

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POS3-030  LIFE BEFORE AND AFTER QUITTING SMOKING

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Adult smokers assigned to either an active or placebo nicotine patch condition completed multiple daily nicotine withdrawal assessments using electronic diaries for three weeks preceding and following an attempt to quit smoking. Multilevel modeling techniques were used to estimate average and individual growth-curves for withdrawal, negative affect, craving, and hunger. Withdrawal and craving increased in the weeks preceding the quit attempt. Increased withdrawal pre-quit predicted smoking two-months post-quit. A peak in most symptoms occurred within 1-2 weeks after the quit attempt. Marked increases in inter-individual variability in symptom parameters were observed following the quit attempt. Cigarette smoking, use of active nicotine patches, observing others’ smoking behavior, stressful events, and strong temptations/urges were modeled as time-varying covariates. The relation between episodic covariates and symptom ratings changed from pre-quit to post-quit. After the quit attempt, the symptom coefficients for recent smoking decreased markedly, the coefficients for temptation events increased dramatically, and the coefficients for stressors decreased slightly. Seeing someone smoke, post-quit, was associated with significant increases in craving self-reports. Results from this study suggest that anticipatory reactions to quitting are related to risk of relapse. Thus, this research suggests that extensive pre-quit assessment captures valuable information and may suggest targets for pre-quit intervention. Results suggest that some symptoms, particularly craving, are highly related to episodic events, and suggest that variability increases from pre- to post-quit.

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POS3-029  DEVELOPMENT OF A SMOKELESS TOBACCO DEPENDENCE SCALE

Herbert H. Severson, Ph.D.*, Laura Akers, B.S., and Shawn M. Boles, Ph.D., Oregon Research Institute

Historically, dependence on smokeless tobacco (ST) products has been assessed using an adaptation of the Fagerstrom Tolerance Questionnaire (FTQ), despite limits in the scale’s predictive abilities. Recently, several teams of researchers have developed improved scales to assess dependence on cigarettes. The present study focused on the development of a dependence scale specific to ST users. A 36-item dependence scale was administered by mail to approximately 300 long-term ST users. Items were adapted from the FTQ and from smoking dependence scales developed by Etter et al. and by Hudmon et al. Other items focused on behavioral aspects of ST use (e.g., awareness of environmental triggers, attachment to usage routines), self-concept (e.g., considering self addicted), and propensity to experience withdrawal symptoms when not using tobacco (e.g., anxiety, irritability, inability to concentrate). Analyses were completed using two approaches. Factor analysis was done to identify aspects of dependence and three factors were identified: use for sedation (seven-items Alpha = .8481), experiences withdrawal and uses frequently (eight-items, Alpha = .8230), and uses for stimulation (five-items, Alpha = .7432). Item response theory analysis was used to develop a scale to measure level of dependence with heavy users of smokeless tobacco. This resulted in a seven-item scale that provides a uni-dimensional measure of dependence. Implications for broader application of the results will be discussed.

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POS3-031  MEASURING TIME FRAMES FOR INTENTIONS TO QUIT SMOKING

Jennifer A. Werner*, Allison B. Lovering, & Thaddeus Herzog

Several researchers have expressed reservations about the validity of the stage of change construct. Some of this criticism has focused on the questionnaire items that comprise the stages of change. Three specific questionnaire items are required to assign each smoker to one of the mutually exclusive stages. Two of these questionnaire items pose questions about intentions to quit smoking within fixed time-frames and require “yes” or “no” responses: “Are you seriously considering quitting in the next six months?” and “Are you planning on quitting in the next 30 days?” However, there is no empirical evidence to suggest that the timeframes of 6 months and 30 days carry any particular importance for smokers. Further, it is unknown the extent to which smokers’ quitting plans change over short periods of time (e.g., day-to-day). This research used a sample of adult smoking cessation clients enrolled in a clinic (n=62). Smokers were presented with a questionnaire item that allowed them to indicate how far in advance they planned their most recent quit attempt. Another questionnaire item measured the stability of smokers’ motivation to quit. The findings revealed that 78.3% of the participants planned their quit attempt within one month of attempting to quit, and 51.7% of participants planned their quit attempt no more than a week in advance. The data also revealed that 37.9% of smokers characterized their motivation to quit smoking as changing “from one day to the next.” These results indicate that most smokers did not plan quit attempts months in advance and that motivation to quit can fluctuate over relatively brief periods of time (e.g., day-to-day). These results have implications for the issue of how best to measure the concept of readiness to quit smoking.

This research was supported by the H. Lee Moffitt Cancer Center and Research Institute.

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POS3-032  THE NEAR-UNIVERSAL EXPERIENCE OF REGRET AMONG SMOKERS IN FOUR COUNTRIES: FINDINGS FROM THE INTERNATIONAL TOBACCO CONTROL POLICY EVALUATION SURVEY

Geoffrey T. Fong*, David Hammond, Mark P. Zanna, and Ron Borland for the ITCPES Research Team

A major argument against comprehensive tobacco control policies is that smokers are well-informed about the risks of tobacco use and that they have made a reasoned decision to smoke. If this is the case, adult smokers should not regret their smoking. We present data rejecting this argument from the Oct-Dec 2002 wave of the International Tobacco Control Policy Evaluation Survey (ITCPES); a random digit dialed telephone survey of a cohort of over 8,000 adult smokers across four countries—Canada, United States, United Kingdom, and Australia. Approximately 90% of all smokers agreed with the statement, “If I had to do it over again, I would not have started smoking.” This high level of regret was nearly identical across all four countries. Regression analyses identified the predictors of regret, which included: Older smokers, women, those with intentions to quit, those who had a greater number of prior quit attempts, those who perceived benefits from quitting, those with higher levels of perceived addiction, those who worried about future damage to health and quality of life, those with higher perceived monetary costs of smoking, and those who believed that society disapproves of smoking. This predictive model was no different across the four countries. These results demonstrate that smokers’ experience of regret is nearly universal and argue strongly against the pro-industry position that smokers have made and continue to make a reasoned decision about their smoking.

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POS3-033  QUITTING-RELATED BELIEFS, INTENTIONS AND MOTIVATIONS OF OLDER SMOKERS IN FOUR COUNTRIES: FINDINGS FROM THE INTERNATIONAL TOBACCO CONTROL POLICY EVALUATION SURVEY

Hua Yong*, Ron Borland, and Mohammad Siahpush for ITCPES team

Older smokers represent an important subgroup that has been shown to benefit considerably from quitting smoking. However, to date little is known about relevant beliefs, intentions and motivations. This study examined factors associated with older smokers (aged 60 years and above) intention to quit smoking using data gathered via the International Tobacco Control Policy Evaluation Survey, a random digit dialed telephone survey of over 8,000 adult smokers from UK, US, Canada and Australia. Having smoked for a long time and having survived, it was hypothesized that older smokers would: perceive themselves as being less vulnerable to the harm of smoking; be less concerned about the health effects of smoking; hold income as indicators of SES. The results indicated that lower SES is significantly associated with higher levels of nicotine dependence, having no intention to quit, and having no confidence in one’s ability to succeed in quitting. The effect of SES does not vary by country. These findings suggest that dependency, intention to quit, and self-efficacy are needed by the more dependent smokers, the ones for whom cessation is most urgent.

This study was funded in the framework of the continuous database project Your Country and Your Life sponsored by a consortium of political parties, trade unions etc.

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POS3-034  QUITTING TOBACCO USE - WISHES, OBSTACLES AND PRACTICES AMONG SWEDISH SMOKERS AND SNUS USERS

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Measures of wish to quit and tobacco dependence have been established in a study of a nation-wide sample representative of the population of Sweden. RESULTS (selected data): Among current daily smokers the wish to quit smoking is stronger in women than in men. On a scale from 0 to 2 the mean score among women is 1.3 (95% CI 1.2 to 1.4) and among men 1.1 (95% CI 1.0 to 1.2). Among men with daily use of snus (Swedish smokeless tobacco) the wish to quit snus use is substantially lower, 0.6 (95% CI 0.5 to 0.7). Nicotine dependence is higher in those who are still smokers than in those who have quit, 1.6 (95% CI 1.5 to 1.7) and 1.2 (95% CI 1.1 to 1.3) respectively on a scale from 0 to 3. Among Ex-Smokers nicotine dependence is higher in those who have quit with a particular cessation aid (NRT or snus), 1.4 (95% CI 1.3 to 1.5) than in those who have not used a particular aid, 1.0 (95% CI 0.9 to 1.1). Among male Ex-Smokers who have used a particular cessation aid the most commonly used and most efficient one is snus. DISCUSSION: Lower cessation rates among snus users than smokers seems to be due to lower wish to quit rather than higher level of dependence. More than half of the Ex-Smokers have quit without using any particular cessation aid, but such aids are still important since they are needed by the more dependent smokers, the ones for whom cessation is most urgent.

This study was supported by a grant from the Canadian Institutes for Health Research, The Robert Wood Johnson Foundation, Cancer Research U.K., Canadian Tobacco Control Research Initiative, Australian Commonwealth Department of Health and Ageing, Centre for Behavioural Research and Program Evaluation, National Cancer Institute of Canada/Canadian Cancer Society.

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POS3-035  SOCIOECONOMIC VARIATIONS IN NICOTINE DEPENDENCE, INTENTION TO QUIT, AND SELF-EFFICACY IN THE US, CANADA, UK, AND AUSTRALIA

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The aim of this research was to examine the association of socioeconomic status (SES) with nicotine dependence, intention to quit smoking, and self-efficacy in the US, Canada, the UK and Australia. Data were collected from 10,297 participants in the first wave of the International Tobacco Control Policy Evaluation Survey. Nicotine dependence was measured using the Heaviness of Smoking Index (HSI). Intention to quit was derived from the question “Are you planning to quit smoking?” and self-efficacy from the question “If you decide to give up smoking completely in the next 6 months, how sure are you that you would succeed?” We used education and household income as indicators of SES. The results indicated that lower SES is significantly associated with higher levels of nicotine dependence, having no intention to quit, and having no confidence in one’s ability to succeed in quitting. The effect of SES does not vary by country. These findings suggest that dependency, intention to quit, and self-efficacy can explain at least part of the reason cessation rates are low among lower SES groups. The extent to which these variables mediate the link between SES and cessation can be addressed in longitudinal analysis using future waves of the International Tobacco Control Policy Evaluation Survey.

This study was supported by a grant from the Canadian Institutes for Health Research, The Robert Wood Johnson Foundation, Cancer Research U.K., Canadian Tobacco Control Research Initiative, Australian Commonwealth Department of Health and Ageing, Centre for Behavioural Research and Program Evaluation, National Cancer Institute of Canada/Canadian Cancer Society.

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**POS3-036**

**DO GENDER, SMOKING LEVEL, NUMBER OF QUIT ATTEMPTS, AND DESIRE TO QUIT SMOKING FOR GOOD PREDICT STAGE OF CHANGE FOR QUITTING IN ADOLESCENT SMOKERS?**

Yu-Mei M. Schoenberger, MPH*, Connie L. Kohler, DrPH, University of Alabama at Birmingham

The predictors of adolescent smoking behavior are not well understood. The purpose of this study is to determine the contribution of gender, number of quit attempts, smoking level (light, moderate, heavy), and desire to quit smoking for good in predicting adolescents’ stage of change for quitting. Methods: Data were collected from 469 adolescents enrolled in a smoking cessation program evaluation. Smoking level was computed based on the number of days adolescents smoked in the past 30 days and cigarettes per day. The relationship of the predictor variables to stage of change was assessed using multinomial logistic regression. Results: The following predictors were associated with stage of change: quit attempts ($c^2(df=6)=25.1$, $p<.001$), smoking level ($c^2(df=4)=29.1$, $p<.001$), and desire to quit smoking for good ($c^2(df=2)=84.6$, $p<.001$). Gender was not a significant predictor. The pseudo $R^2$ for this model indicated approximately 41% of variability in stage was explained. Light or moderate smokers were more likely than heavy smokers to be in contemplation or preparation ($p<.01$) than in precontemplation, as were those who desired to quit smoking a great deal ($p<.001$). Those who reported 6 or more quit attempts were more likely to be in precontemplation than those reporting fewer attempts. Conclusion: Adolescents’ stage of change for quitting was predicted by level of smoking, level of desire to quit for good, and number of past quit attempts. These findings provide insight regarding how adolescent smokers differ from adult smokers.

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**POS3-037**

**ADAMANT SMOKERS WHO WANT TO QUIT SMOKING**

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We previously reported that smokers cluster into meaningful subgroups with distinguishable attitudes and behaviors regarding smoking and smoking restrictions. “Adamant” smokers, representing 42% of current smokers, oppose smoking restrictions and are unlikely to accommodate nonsmokers. But do they want to quit smoking? Here we examine the characteristics of adamant smokers who are seriously considering quitting. Computer-assisted telephone interviews were conducted with a random sample of Ontario adults in 1996 ($n=1,764$; response rate=65%). Cluster analysis helped categorize smokers with respect to their attitudes and behaviors. Design-based chi-square and t-tests were used to compare the characteristics of adamant smokers who are seriously considering quitting (i.e., in the contemplation or preparation stage – “intenders”) to non-adamant intenders, and adamant intenders to adamant precontemplators. Thirty-six percent of adamant smokers were seriously considering quitting in the next six months or in the next 30 days, whereas 65% of non-adamant smokers were planning to quit. Compared to non-adamant intenders, adamant smokers intending to quit were older, more addicted, more likely to smoke daily, and less likely to acknowledge the health effects of smoking and second hand smoke. Adamant intenders were more likely than adamant precontemplators to believe that quitting smoking improves health. Despite being staunch supporters of their right to smoke and opposing smoking restrictions, over one third of adamant smokers were planning to quit within the next six months. Tobacco control initiatives need to adequately and appropriately help this subgroup of smokers to quit smoking. Program and policy implications will be discussed.

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**POS3-038**

**FACILITATING SELF-DETERMINED TOBACCO-DEPENDENCE CESSION**

Geoffrey Williams, M.D., Ph.D.*, Holly McGregor, Ph.D., Daryl Minicucci, Ph.D., Edward Deci, Ph.D., University of Rochester

Background: Effective interventions for tobacco dependence exist, but little is known about how these interventions motivate cessation. Self-determination theory (SDT) proposes that patient autonomy is an essential factor in motivating effective health behavior change. Thus, an intervention was designed to enhance patients’ autonomous motivation for smoking cessation. Methods: We randomized 1006 smokers to intensive individual treatment of at least 4 visits over 6 months versus community care. Patients were relatively poor and undereducated and fewer than half were initially ready to try quitting. Patient perception of autonomy support from clinicians was assessed at 1 month. Autonomous and competence motivations for cessation were measured at baseline and 1 month. Intention-to-treat analyses were conducted to determine the effects of the intervention on motivation to stop smoking, making a serious quit attempt, use of cessation medications, biochemically validated 6-month cessation, and validated 6-month prolonged abstinence. Results: The intensive intervention significantly increased autonomous and competence motivation for cessation. Patients in the intervention were more likely to make a serious quit attempt (49.7% versus 39.0%; $p<.01$) and to use medications (30.8% versus 15.8%; $p<.001$). Importantly, patients in the intervention had a greater validated 6-month 7-day point-prevalence rate than community care (11.8% vs. 4.1%; $p<.001$; NNT = 13.06), and had greater validated 6-month prolonged abstinence (11.2% vs. 3.8%; $p<.001$; NNT = 13.45). Conclusions: A self-determination theory based intervention focused on supporting smoker’s autonomy was effective in increasing autonomous and competence motivations, use of medications, and validated 6-month point prevalence and prolonged abstinence.

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**POS3-039**

**ACCEPTABILITY OF PROACTIVE CONTACT AND COUNSELING AMONG FEMALE SMOKERS**

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Most smokers are not ready to quit smoking, and even when ready, will not seek formal assistance. Proactive (as opposed to reactive) contact can increase treatment reach, but it is unclear whether smokers will be receptive to this strategy, especially those not interested in quitting. We evaluated this issue. Female smokers with a recent abnormal pap test were identified via automated HMO records, proactively contacted, screened, and invited to participate in a phone-based counseling program, regardless of their desire to quit smoking. Sixty-five percent of eligible women ($n=273$) enrolled. Mean age was 33 (range, 18-67) and mean cigs/day was 14 (range, 5-45). 82% were Caucasian. 61% had household incomes <$35,000 a year. Women in all stages of change enrolled (16% Precontemplation, 32% Contemplation, 32% Preparation). Participants were randomized to usual care or a 4 call counseling program. Call timing was individualized within a 6 month window and all calls were proactively initiated by the counselor. 87% of women have completed the counseling phase. Of these, 82% completed all 4 calls, 8% completed 3 calls, 3% completed 2 calls, 4% completed 1 call, and 2.5% completed no calls. Only 2 participants actively refused calls. Number of calls completed is unrelated to baseline stage of change or other motivational indices. In sum, women were receptive to the proactive recruitment and counseling. Final results will be presented, but the data suggest this strategy is an effective way to reach smokers, even those with no immediate interest in quitting.

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POS3-040  
**MOTIVATIONAL INTERVENTION PROMOTES READINESS BUT DOES NOT REDUCE SMOKING AMONG PEOPLE WITH HIV**

Karen S. Ingersoll Ph.D.*, Stephanie Fox Psy.D., Virginia Commonwealth University, Carolyn Heckman-Stone Ph.D., Iowa State University, Jessye Cohen M.S., Virginia Commonwealth University

Smokers with HIV are at increased risk of adverse health outcomes. Smoking reduction interventions are needed to address the unique health concerns of this group. We developed and tested a novel intervention designed to reduce smoking and increase medication adherence for patients with HIV. The single-session 90-minute individually-delivered intervention, READY, was based on motivational interviewing and included personalized feedback of risk, decisional balance exercises, readiness rulers, and change planning. Subjects were 60 people with HIV who smoked daily, took combination medications for HIV, read English, and were not overtly cognitively impaired. Participants were 70% male, 91% African American, high-school educated patients who smoked 13.4 cigarettes per day with a mean Fagerstrom score of 5. Most smoked high tar mentholated cigarettes and bought by the pack. 50 Completed both baseline assessment and one month follow-up assessment including Time Line Follow Back for cigarettes. Analyses included descriptive statistics and med test for smoking cessation. Findings suggest the importance of autonomous motivation and confidence to quit among this population of smokers.

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POS3-042  
**SMOKING CESSATION PATTERNS AND PREDICTORS AMONG ADULT CALIFORNIANS OF KOREAN DESCENT**

Ming Ji*, Richard Hofstetter, Mel Hoffel, Veronica Cramer, Joon Ju Song

Objectives This paper describes the smoking cessation behavior of adult California residents of Korean descent. Methods A large cross-sectional survey was conducted on a representative sample of Korean immigrants in California (n=3485). The survey questionnaire was in both English and Korean language. Descriptive statistics and weighted logistic regression were used for describing patterns of and for identifying significant predictors of smoking cessation in this population. Results The overall quit rate (# of ex-smokers/# of ever smokers) was 55% in this population with 55.8% among male smokers and 49.6% among female smokers. Among the current smokers, there were 67% light smokers and 10% hardcore smokers. 80% current male smokers and 72% current female smokers had tried to quit among which 62.4% males and 58.2% females made a significant quitting attempt. Age (p<0.0001), gender (p=0.0034), job satisfaction (p=0.0016), social network discouraging smoking (p=0.0255), home smoking policy (p<0.0001), health belief (p=0.0523), health concern (p=0.0068), weight concern (p<0.0001) were significantly associated with abstinence for 90 days or more. Conclusions Smoking cessations are likely to be successful in this Korean immigrant population but effective strategies remain to be investigated.

This study is based on data supported by grant no. 9RT-0073 to C. Richard Hofstetter, funded by TRDRP (Tobacco-Related Disease Research Program), State of California. Dr. Ming Ji was funded by this TRDRP grant, and also has been supported by a fellowship from Cancer Research Foundation of America and funding from the Center of Behavioral and Community Health, San Diego State University.

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POS3-043  
**CIGARETTES ARE MORE ADDICTIVE THAN STIMULANTS: AVOIDANCE SELF-EFFICACY OF CIGARETTE SMOKERS**

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How addictive are cigarettes in comparison to cocaine and methamphetamine? Among recovering stimulant users, self-efficacy ratings were examined for five avoidance behaviors: (1) overcoming cravings, (2) abstaining entirely from stimulants, (3) abstain entirely from smoking cigarettes, (4) controlling anger, and (5) abstaining from alcohol. Self-efficacy responses were rated on a scale of: (1) "not at all," (2) "a little," (3) "somewhat," (4) "very much," (5) "almost entirely," and (6) "entirely." A total of 170 current smokers were included in this study from a larger sample of 259 stimulant users. Prior analysis revealed no Treatment Group effect so this factor was collapsed. Smokers were then stratified by Level of Smoking: light (1 to 10 cigarettes per day, n= 32), moderate (11 to 20 cigarettes per day, n= 49), and heavy (20 or more cigarettes per day, n= 53). A three-group repeated measures MANOVA revealed an effect of Smoker Group: Wilks' lambda = 1.90, p < .05. However, the relationship between autonomous motivation and confidence to quit among this population of smokers.

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POS3-044  CORRELATES OF SELF-EFFICACY JUDGMENTS IN SMOKING CESSATION

Quyen B. Nguyen, B.A.*, Shu-Hong Zhu, Ph.D.

Self-efficacy, or confidence in one’s ability to perform a behavior (Bandura, 1977), is influential in smoking cessation. Most research focuses on self-efficacy ratings as predictors of quitting success. However, factors that smokers use to rate their own self-efficacy remain relatively unstudied. The California Smokers’ Helpline investigated relationships between self-efficacy ratings and demographic, personal, and environmental factors, using baseline data from English-speaking subjects (N=3531). Multivariate analysis indicated that education (OR=1.311), number of cigarettes per day (CPD; OR=1.427), delay of first cigarette smoked in the morning (OR=1.256), length of past quit attempts (OR=1.398), and readiness to quit (OR=1.374) made independent contributions to the prediction of self-efficacy ratings. The presence of other household smokers did not predict confidence in the univariate analysis and was not included in the multivariate analysis. Gender was significant in the univariate analysis but not in the multivariate analysis. Data from Asian-language CSH subjects (N=777) were analyzed to test the hypothesis that Asians use contextual factors (e.g., environmental) more in rating confidence to quit. In multivariate analysis, time to first cigarette (OR=2.464) and longest quit attempt (OR=3.036) were the only statistically significant predictors of confidence. Gender and CPD predicted self-efficacy ratings in univariate analyses but did not independently contribute to the prediction in the multivariate analysis. Presence of other household smokers failed to predict confidence in the univariate analysis of Asian-language smokers. Results suggest that both Asian-language and English-language smokers rate abstinence self-efficacy more on personal characteristics and less on environmental challenges.

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POS3-046  THE WISCONSIN PREDICTING RELAPSE IN SMOKING MEASURE (WI-PRISM) – A NEW MEASURE OF RELAPSE PRONENESS

Megan E. Piper, M.A.*, Guoqing Ma, M.S., Daniel M. Bolt, Ph.D., Danielle E. McCarthy, M.S., Stevens S. Smith, Ph.D., Michael C. Fiore, M.D., M.P.H., and Timothy B. Baker, Ph.D., University of Wisconsin.

The ability to predict relapse proneness has great potential clinical and research utility, in terms of treatment planning and understanding the nature of tobacco dependence. The current measure was developed using a multiple regression approach to select items that accounted for the most variance in relapse proneness. The first content area identified was physical dependence as reflected by morning craving and cigarettes smoked per day (c.f., the FTND). Items were also selected from an orthogonal content area, environmental risk. Content areas were chosen and items selected based on data from participants (N = 608) in a randomized, controlled clinical trial of smoking cessation and these results were then validated in a separate clinical trial sample (N = 463). Results reveal that the 5 items in the WI-PRISM significantly predict relapse at one week, six months, and one year, as well, if not better than the FTND.

This study was conducted at the University of Wisconsin. Supported by National Cancer Institute Grant # P01-CA84724-03.

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POS3-048  IMPACT OF WEIGHT CONCERN AND BMI ON SMOKING QUIT ATTEMPT

Elizabeth Hoel, Sharon Allen, M.D., PH.D., Tracy Bade, MPH*

Previous research has demonstrated a correlation between weight gain concern and smoking cessation. This study examined the relationship between women’s body mass index (BMI) and weight gain concerns, and their success in initiating a quit attempt. Data were collected from female smokers (n= 96) participating in an intent-to-treat smoking cessation trial examining menstrual cycle effects on smoking relapse. Subjects’ mean age was 29.1 + 6.5 years, mean cigarettes smoked/day 18.2 + 6.9. At screening, women rated their concerns about weight gain on a 1-5 Likert scale (low to high concern) and identified a “maximum acceptable weight gain” for after cessation. Analyses were conducted on two groups: women who quit smoking on their assigned quit date (n=65) and those who did not (n=31). Women who successfully initiated a quit attempt had smoked slightly longer (mean = 12.6 + 6.4, p<0.03) Mean BMI and weight concern for the two groups were compared using Analysis of Covariance, controlling for age; no significant differences were observed. BMI and weight concern were not significantly correlated (r = .11, ns). Subjects’ age and weight gain concerns did manifest an apparent curvilinear relationship, peaking at seven pounds at age 30. Younger subjects’ and older subjects’ maximum acceptable gain did not exceed four pounds. Although BMI and weight concerns do not appear to be related to women’s ability to make a quit attempt in general, any such concern may be most prevalent in younger (<25) or older (>35) women. Thus, it may be prudent to consider these factors during a smoking cessation attempt.

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POS3-049
SMOKING STATUS, DIETARY CONSUMPTION, AND STAGES OF CHANGE FOR DIETARY BEHAVIORS AMONG WIC WOMEN

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This study examined dietary behaviors and attitudes in relation to smoking status among women (n=2,043) enrolled in the Maryland WIC Food For Life (FFL) Program. This study assessed dietary behaviors and stage of change for eating a low fat diet, a high fiber diet, and 5 or more servings of fruits and vegetables daily (Havas et al., 2003). Participants identified their smoking status: Never (NS), Current (CS) or Former (FS). Compared to FS and NS, CS were significantly more likely to be single, receive food stamps, have lower incomes and less education. As expected, CS (M = 27.3, SD = 6.8) had significantly lower body mass indices (BMI) than FS (M = 28.9, SD = 7.5) and NS (M = 29.3, SD = 7.4). Relative to CS, FS and NS reported consuming significantly less total fat and lower percentages of calories from fat and sweets. FS and NS were more likely to be eating more fruits and vegetables (p < .001), low fat diets (p < .001) and diets high in fiber (p < .001) and were in later stages of change for these dietary behaviors relative to CS. Although FS have been thought to substitute high calorie foods and problematic diets for their smoking habit, current findings suggest that FS are similar to NS and in some cases more involved in changing dietary behaviors. Greater attention should be paid to the relation between smoking cessation and changes in dietary behaviors.

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POS3-050
ASSESSMENT TOWARD TOBACCO ECONOMICAL AND MEDICAL PROSPECTIVE TRIAL (ATTEMPT): WEIGHT GAIN CONCERN OF SMOKERS INTENDING TO QUIT

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BACKGROUND: Concern about, perception of, and actual weight gain are factors thought to influence relapse from smoking cessation. The prospective multinational cohort study, ATTEMPT examines these factors in smokers intending to quit within 3 months. METHODS: Data are collected at baseline and every 3 months, for at least 1 year from participants of an Internet survey beginning spring of 2003. A total of 2009 respondents from the US (n=1400), Canada (n=208), France (n=201), and the UK (n=200) met the inclusion criteria (at least 5 cigarettes per day, age 35-65 years, and weight <135 kg). Concern about weight gain is measured using the Weight Concern Scale (WCS; Borrelli and Mermelstein, 1998), where higher scores indicate greater concern. RESULTS: According to self-reported weight and height at baseline, mean BMIs were 28.5, 27.4, 26.8, and 25.7 for males, and 25.5, 27.7, 28.6, and 24.4 for females in the US, Canada, the UK, and France, respectively. Mean WCS scores were 5.0, 4.4, 4.8, and 5.9 for males, and 6.0, 6.1, 6.0, and 7.2 for females in the US, Canada, the UK, and France, respectively. BMI and WCS scores were statistically significantly different when comparing men versus women and across countries (P<.05). CONCLUSIONS: Despite similar demographic baseline characteristics, ATTEMPT participants differ in their baseline BMI and weight concern. Females are more concerned about weight gain regardless of country. As this study progresses, data collected will evaluate the impact of weight concern, perceived and actual weight change on smoking cessation attempts.

This study was conducted by RTI and Sanofi-Synthelabo Recherche.

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POS3-051
THE RELATIONSHIP BETWEEN GENDER AND OTHER PREDICTORS OF WEIGHT CONCERN IN ADOLESCENT SMOKERS

Dana A. Cavallo, Ph.D.*, Sherry McKee, Ph.D., and Suchitra Krishnan-Sarin, Ph.D. Yale University School of Medicine

A relationship between weight concerns and smoking behavior has been established in adolescents. Smoking specific weight concerns appear to be more common in females and older adolescents and are positively related to body mass index (BMI). The purpose of this study was to examine whether gender interacted with age, average daily smoking, and BMI to predict smoking-specific weight concerns. Participants were 108 smokers, ages 14-18, who were interviewed for participation in a larger inpatient study on smoking withdrawal. Smoking specific weight concern was measured by two questions: “How much do cigarettes help you control your weight?” and “How concerned are you about gaining weight as a result of quitting?” Self-reported average daily cigarette consumption was determined using the timeline follow-back method for the 30 days prior to the interview. Overall, females had higher mean values, compared to males on both weight concern items. Regression analysis examining interactions of gender with age, BMI, and average daily smoking revealed an interaction of gender and BMI on predicted use of smoking to control weight. For females, there was a negative relationship between BMI and smoking to control weight, whereas for males, there was a positive relationship. Additionally, there was an interaction of gender and average daily cigarette use when predicting concern about gaining weight upon quitting. For females, there was a positive relationship between concern about gaining weight upon quitting and average daily cigarette use. For males, the relationship was not significant. These findings highlight the importance of examining gender differences in adolescent smokers regarding weight concern and the potential influence these concerns have on quitting smoking.

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POS3-052
RELIABILITY AND VALIDITY OF THE FAGERSTROM TEST FOR NICOTINE DEPENDENCE (FTND) AMONG TWO RACIAL GROUPS OF PREGNANT ADOLESCENT SMOKERS

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Smoking during pregnancy is pervasive in America despite the damaging physiological effects. Among pregnant adolescents the rate of smoking exceeds all older age groups of women with evidence of clear racial differences. This study assessed the utility of the Fagerstrom Test for Nicotine Dependence (FTND) to quantify nicotine dependence in 92 Black and 91 White pregnant adolescent smokers enrolled in a nurse-manged smoking cessation intervention. Pregnant adolescent smokers’ mean age was 16.8(S.D. 1.2, range 14-19) years with the mean gestational age 20 weeks (S.D. 7). In this study of relatively light smokers (average: 7 cigarettes/day), the mean baseline FTND total score was 3.2 (S.D. 1.5) for Black participants and 3.6 (S.D. 1.5) for their White counterparts. However, more Black than White participants were classified as experiencing low dependence; more White than Black participants were classified as experiencing moderate to high dependence (Chi-square[3], 16.29, p<.01). Cronbach alpha was 0.68 for the Black sample compared to 0.55 for the White sample. Even though items on the FTND correlated in the expected directions with variables related to addiction with cigarettes, the best subset of items for Black participants included Time to first cigarette, Number of cigarettes per day, and Smoke if ill. For White participants, the best subset included all items on the scale excluding Morning smoke. Clinicial implications drawn from the results are discussed.

No Funding

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POS3-053 VALIDATION OF THE TIMELINE FOLLOW-BACK IN THE ASSESSMENT OF ADOLESCENT SMOKING

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The Timeline Follow-Back instrument (TLFB), first developed by Sobell and Sobell (1979) to assess drinking patterns among adult alcoholics, has been identified as a valid and reliable method of quantifying alcohol use patterns. The use of this instrument has been expanded to other behaviors such as drug use, sexual behavior, binge eating, and panic. In the area of adult smoking, researchers have provided some evidence of the validity and reliability of this assessment instrument. However, to date, there is no published evidence of the reliability and validity of the TLFB method in the assessment of smoking behavior among adolescents. Therefore, the purpose of this study is to present early evidence of the validity and reliability of the TLFB when used to collect information on adolescent smoking behavior. Through secondary data analysis of four studies on adolescent smokers, we examined the associations between the TLFB and measures of dependence, saliva cotinine, and smoking history. Moreover, we examined the stability of the TLFB data across a six-month time period. Results provide early evidence of the usefulness of the TLFB in the assessment of adolescent smoking. In particular, the TLFB instrument offered important data on the heterogeneity of adolescent smoking patterns. The implications of these findings on the assessment of adolescent smoking are discussed.

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POS3-054 CONUNDRUMS OF ADOLESCENT RESEARCH AND TREATMENT

Sherry Emery* Joan Sieber

Researchers in adolescent smoking cessation face complex ethical and scientific problems: • Parental permission and mandated reporting compromise confidentiality. • A confusing patchwork of rules results from differing state and federal laws, and IRBs’ interpretations of: risk, definition of minor, illegal behavior, and mandated reporting. • Research is often compromised by adherence to the letter, not the permissible flexibility, of laws. For example: Students caught smoking in high school are given an option of participating in a smoking cessation treatment and research program. Many choose program participation, but most are minors whose parents do not know they smoke, complicating parental permission. Instances of abuse that come to light in the course of the treatment may be reportable, depending on the nature of the abuse, the background of the researcher, and the location of the research. Purchase of cigarettes by minors is illegal in most locations, hence identified subjects might be subpoenaed in an effort to identify those who sell to minors. Even the researcher who designs a protocol that creatively skirts these many obstacles may find that their IRB fails to use flexibility permitted within the regulations, thus creating more stringent interpretations than the protocol can answer. Separate surveys of IRB administrators and researchers with funded teen-smoking cessation projects reveal a wide range of erroneous and valid approaches to solving the above problems. The results of the surveys were shared among 31 nationally recognized professionals in service delivery to youth, IRB administrators and board members, and researchers. A workshop examined the results and made recommendations.

The Robert Wood Johnson Foundation

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POS3-055 ARE SUBJECTS WHO DECLINE COTININE TESTS LYING ABOUT THEIR SMOKING?

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It is generally assumed, but rarely tested, that subjects failing to comply with evaluation procedures such as saliva assays are lying about quitting smoking. Our studies show that factors other than lying are mostly responsible for non-compliance. In Study 1, pregnant smokers (n=1,101) calling a quitline were randomized to telephone counseling or control. Both groups were asked to mail in saliva samples at recruitment and 3rd trimester follow-up. Compliance for both groups was virtually the same at recruitment (34.9% counseling, 35.2% control) and follow-up (35.8% counseling, 36.3% control). Compliance at recruitment did not reliably predict compliance at follow-up on the individual level. Most interestingly, compliance was independent of smoking status: 35.4% for self-reported smokers (who presumably told the truth) vs. 36.2% for self-reported quitters. In short, about 1/3 of subjects at any given time complied, with compliance independent of smoking status or treatment condition. In Study 2, post-counseling subjects (n=604) were stratified by self-reported smoking status, randomized into two conditions, and asked to mail in saliva self-tests. In the “difficult” condition, the test procedure resembled that of commercially-available self-tests. In the “easy” condition, the procedure was greatly simplified. Again, compliance among self-reported quitters and smokers was virtually the same (33.3% vs. 32.4%). But subjects in the “difficult” condition were significantly less likely to comply than those in the “easy” condition (27.1% vs. 38.9%). Thus, failure to comply with evaluation procedures may result more from external factors such as task demands, or random factors (e.g. too busy at the time), than from internal factors such as lying.

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POS3-056 VALIDATING SELF-REPORT OF SMOKING WITH BIOCHEMICAL MEASURES IN ADOLESCENTS

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The validity of self-report is often questioned in adolescents, due to concerns about legal sanctions, confidentiality, and the need to please the interviewer. Few studies to date have used biochemical measures like carbon monoxide or cotinine levels to validate self-reports. The present study was aimed at examining the relationship between self-report and biochemical measures in a population of adolescent smokers and determine if there are any gender or age differences. Forty-one adolescent smokers provided self-report of cigarette smoking using the time line follow-back (TLFB) for the day of and the day prior to the date when breath carbon monoxide and urine cotinine samples were obtained. Convergence between self-reported smoking and the biochemical measures was analyzed by gender and age group (14-16 years versus 17-18 years). Analyses indicated that there was a significant positive correlation between self-report and CO for females and for males, and there was also a significant positive correlation between self-report and cotinine for males, but not for females. For the younger age group, there was a significant positive correlation between self-report and CO, but not for cotinine levels. For the older age group, there was a positive correlation between self-report and CO, as well as cotinine levels. These findings suggest that there are gender and age differences in self-report validity, with older adolescents and males showing greater concordance between self-report and biochemical measures. Limitations to this study, research recommendations, and implications for treatment studies are addressed.

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POS3-057  EVIDENCE FOR NICOTINE COMPENSATION IN ADOLESCENT SMOKERS
Jon D. Kassel, Ph.D., Justin Greenstein, B.A., Megin Wardle, B.A., Marisa Yates, B.A., Dan Evatt, B.A., University of Illinois at Chicago; Tom Eisenberg, Ph.D., Virginia Commonwealth University; and David Drobes, Moffitt Cancer Center, University of South Florida
This study was supported by the Ferno Award for Innovative Research from the Society for Research on Nicotine and Tobacco and Pharmacia and Upjohn.

The vast majority of smokers begin smoking as adolescents. Indeed, adolescent smoking continues to represent a serious public health concern. Yet very little is known about the mechanisms subserving tobacco smoking among teen smokers. As such, the present investigation examined the extent to which adolescent smokers compensate (or titrate) their smoking when smoking ultra-low-yield nicotine cigarettes. As a part of their participation in a larger study, 35 adolescent smokers (mean age=17.5; 51.4% female) were randomized to one of two nicotine cigarette (between-subject) conditions: ultra-low-yield (LY; 0.06 mg/nic) and high yield (HY; 1.14 mg/nic). Research cigarettes provided by UltraTech Inc. were used and contained tar levels of 17.9 mg and 15.9 mg, respectively. Participants were instructed to smoke in an ad libitum manner. Smoking topography measures were assessed using the CReSS system and included number of puffs, average puff volume, and inter-puff intervals. On average, participants had been smoking for 2.3 years, smoked 5.6 days a week, and 22.0 cigarettes a week. Analyses revealed significant differences in number of puffs smoked: Those smoking the LY cigarettes took more puffs (Mean=23.2) per cigarette than those who smoked the HY cigarette (Mean=15.2), p<.005. No differences in puff volume or inter-puff-intervals were observed. These findings suggest that adolescent smokers do compensate when smoking an ultra-low-yield cigarette, yet do so not by puffing harder or more quickly, but rather by taking more puffs. Implications of these findings and their relevance to understanding adolescent smoking behavior will be discussed. This study was supported by the Ferno Award for Innovative Research from the Society for Research on Nicotine and Tobacco and Pharmacia and Upjohn.

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POS3-058  A PROSPECTIVE EVALUATION OF ACUTE TOBACCO ABSTINENCE EFFECTS IN MALE AND FEMALE ADOLESCENT SMOKERS
Suchitra Krishnan-Sarin, Ph.D.*, Dana Cavallo, M.S., Tricia Dahl, B.S., Tony P. George, M.D., Ran Wu, M.S. Yale University School of Medicine

Tobacco withdrawal symptoms have been shown to play a significant role in mediating relapse to smoking in adult smokers. While retrospective data suggest that adolescent smokers do experience withdrawal symptoms there are no prospective studies that have examined tobacco abstinence in this high-risk population. We conducted a prospective evaluation of tobacco abstinence in male and female adolescent smokers when compared with male and female nonsmokers in psychological (nicotine withdrawal symptoms, mood, sleep disturbances), physiological (blood pressure, heart rate, skin temperature) and hormonal markers (salivary cortisol, urinary catecholamines) that have been shown to be altered during tobacco abstinence in adult smokers. Smokers (n=57, 29 males, 28 females) and nonsmokers (n=44, 19 males, 25 females) participated in a 48-hour inpatient session at the Children’s Clinical Research Center at Yale New Haven Hospital during which smokers were required to be abstinent from cigarettes. Abstinence symptoms were assessed repeatedly over the 48-hour period. The results indicate that smokers do experience increases in nicotine withdrawal symptoms and tobacco craving as well as mood changes during acute tobacco abstinence when compared with nonsmokers (p<.05). Early morning cortisol levels evaluated at 15 and 39 hours of abstinence were significantly higher in smokers when compared with nonsmokers. While there were no gender differences in withdrawal symptoms or mood changes, female smokers did endorse greater sleep disturbances and appeared to have greater suppressions in diastolic blood pressure levels during tobacco abstinence (p<.05) when compared with male smokers. These results indicate that adolescent tobacco smokers do experience tobacco abstinence and that there are gender differences in some abstinence markers.

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POS3-059  THE PHARMACOKINETICS OF NICOTINE REPLACEMENT THERAPY (NRT) IN ADOLESCENT SMOKERS
Jae H. Choi, PharmD* (1), Philip Watson, MD (2), Mark Solomon, MD (2), Darren A. Targett, PhD (1), Carolyn M. Dresler, MD (1) and Kenneth R. Strahs, PhD (1).
GlaxoSmithKline Consumer Healthcare(1) and Children’s Hospital Medical Center, Cincinnati(2).

Although Efficacy of NRT has been studied in adolescent smokers, the pharmacokinetic handling of these products by adolescent smokers has not been studied. As the smoking initiation age is becoming younger and adolescent smokers are now comprising a significant portion of smokers, whether or not young adolescent smokers handle nicotine similarly to adults needs to be explored. A single dose, open-label, dose-escalation study was conducted with 2 and 4 mg nicotine lozenge, 14 and 21 mg nicotine patch and 2 and 4 mg nicotine gum in adolescent smokers (aged 13-17 years). Consent was obtained from subjects as well as their parents prior to study entry. A total of 45 adolescent smokers who smoked > 10 cpd were enrolled and 37 subjects (18 male, 19 female) were included in the pharmacokinetic analysis. Subjects weighed 102-172 lbs and were 60-71 inches tall. A total of 9 blood samples (5 mL each) were collected over 12 hours postdose after each dose. Tolerability of the lower dose was evaluated before administering the higher dose. Although no definite conclusions can be made due to small sample size, the nicotine profiles for each formulation observed in adolescent smokers were generally comparable to those observed in adult smokers. NRT was moderately well tolerated. This study was funded by GlaxoSmithKline Consumer Healthcare.

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POS3-060  FORCED AND VOLUNTARY ORAL NICOTINE CONSUMPTION DO NOT INFLUENCE BODY WEIGHT GAIN IN ADOLESCENT MICE
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Studies with adolescent rodents are needed to understand how adult models of nicotine exposure translate into younger, developing animals. There is growing interest in using oral nicotine consumption models with rodents to examine nicotine’s biobehavioral effects during adolescence given the ease of administration. This experiment examined whether previous reports that nicotine exposure via osmotic minipump decreases body weight gains in periadolescent rats, could be replicated in adolescent mice using an oral nicotine administration model. The effect of forced and voluntary oral nicotine consumption on body weight gain and food consumption was examined in 124 C57BL/6j periadolescent male and female mice (33 days old at beginning of experiment). Young mice had continuous access to 2 bottles containing either 25 ug (-)-nicotine freebase dissolved in water (NIC) or water (WTR). Mice were placed into 1 of 3 treatment groups for 4 weeks: “Voluntary” (NIC-WTR), “Forced” (NIC-NIC), or “Control” (WTR-WTR). Body weight, food consumption, and fluid intake were measured every 3 days. Repeated-measures ANOVAs showed that body weight and food consumption increased during adolescence for all mice, and that males ate more food and weighed more than did female mice, regardless of nicotine exposure. Surprisingly, nicotine treatment, forced or voluntary, did not affect body weight gain during adolescence. These findings suggest species differences in the effect of nicotine on body weight and that oral nicotine exposure may not alter the rapid growth rate displayed by mice during this developmental period.

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POS3-061

**EFFECT OF REPEATED NICOTINE EXPOSURE DURING ADOLESCENCE ON REWARD-RELATED LEARNING**

Peter Olausson Ph.D.*, Jane R. Taylor Ph.D., Yale University

Repeated nicotine exposure produces alterations in neural systems implicated in incentive motivational and adaptive learning processes. Stimulus-reward learning and conditioned reinforcement have been proposed to model aspects of processes relevant to addiction, but the consequences of prior repeated nicotine treatment on these behaviors have not been extensively studied. We have previously reported enhancements of stimulus-reward learning and conditioned reinforcement following repeated nicotine. Here we report on sex-differences in the effects of prior nicotine exposure during adolescence on these behaviors. Nicotine was given for 15 days (postnatal days 35-50) ending 5 days prior to training. For stimulus-reward learning, water-deprived animals were trained to associate a tone-light conditioned stimulus (CS) with subsequent delivery of water. When training on the stimulus-reward learning task had been completed, two novel levers were introduced and animals were tested on conditioned reinforcement. Responding on one lever produced the CS and responding on the other had no consequences. Prior nicotine exposure facilitated stimulus-reward learning in males, but decreased learning in females. However, female rats displayed increased stimulus-reward learning at baseline. Prior repeated nicotine treatment increased responding for conditioned reinforcement in both males and females. The present data suggests that repeated nicotine treatment during adolescence facilitates reward-related learning and enhances responding for conditioned reinforcement in males, but that these effects show important sex-differences. Thus, prior nicotine exposure during adolescence produces neuroadaptations within cortico-limbic-striatal brain circuits that may influence associative learning and augments incentive motivational processes. Together, these data suggests that nicotine-induced alterations in reward-related learning and incentive motivation may contribute to compulsive smoking and to cue-induced relapse in humans in humans.

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POS3-062

**GENDER-DEPENDENT EFFECT OF NEONATAL MANIPULATION ON NICOTINE-INDUCED BEHAVIORAL RESPONSE IN JUVENILE RATS**

Minjung Park*, James Belluzzi, Ashley Joseph Sheena Pantel and Frances Leslie

Growing evidence suggests that women and men differ in their responses to nicotine. Individual variation in drug sensitivity is well known and often correlates with individual variation in stress reactivity. In the present study, we tested the hypothesis that neonatal environmental manipulations, which have been shown to alter adolescent stress sensitivity, differentially affect male and female responses to nicotine. Rats were separated for 15 min (H) or 60 min (maternal separation, MS), or not separated (NH) daily for the first two postnatal weeks. At postnatal (P) day 26, the groups were tested for locomotor activity and place conditioning in a conditioned place preference test. Response to a novel environment (preconditioning), effects of single administration of nicotine (0, 0.25 or 0.5 mg/kg) (conditioning) and rewarding effect of nicotine (postconditioning) were recorded. Neonatal manipulation (P<0.032) and gender (P<0.006) significantly affected horizontal activity in the novel environment. While no changes were observed between male groups, H females were significantly (P<0.01) less active than NH females. During the 20-min conditioning period, nicotine had no effect on NH females, but the high dose significantly (P=0.0013) increased horizontal activity in H females, whereas the low dose significantly (P=0.0017) decreased horizontal activity in MS females. All three male treatment groups exhibited similar patterns of nicotine-induced horizontal activity increases at the high dose. In contrast to nicotine’s effect on locomotion, nicotine did not induce CPP in any of the groups tested. These data suggest that neonatal manipulations induce gender-dependent responses to a novel environment and to nicotine during adolescence.

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POS3-063

**LOW-LEVEL ADOLESCENT NICOTINE EXPOSURE ALTERS ETHANOL SENSITIVITY AND SELF-ADMINISTRATION IN ADULT MICE**

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Cigarette smoking by adolescence is a strong predictor of future drug use, abuse, and dependence. While this “gateway drug-effect” is often associated with psychosocial factors, data from this study suggests that adolescent nicotine use may permanently disrupt reward systems. Behavioral pharmacological methods known to be indirectly (elevated plus maze, EPM; motor activity, MA) and directly (self-administration, SA) related to drug reinforcement were used to examine changes in ethanol sensitivity. Testing was performed on adult mice that were exposed to nicotine (0.3, 1.0, and 3.0 mg/kg, SC, M-F; b.i.d.) or saline during adolescence (postnatal days 25-60). Prior to testing, subjects had a 14-day drug-free, time-off period. Mice underwent EPM testing for two days; ethanol or saline injections were counterbalanced across days. The MA effects (30 min) of ethanol (4, 8, 16, and 24%, v/v, IP) were measured daily; ethanol tests were preceded and followed by saline control tests. Following the dose-response curve, mice received saline followed by 5 days of the 24% ethanol concentration. Thereafter, mice underwent ethanol self-administration testing. A food-induced drinking procedure was used. Across a five-day period, subjects were tested with water, three days of ethanol, and then two-bottle-choice (3% and 9%). A dose-dependent relationship between adolescent nicotine exposure and ethanol sensitivity was noted in the adult mice across all test conditions. Subjects exposed to nicotine showed an increased response to ethanol’s antianxiety effects, greater sensitivity to ethanol’s motor stimulating effects, and decreased response to ethanol’s motor depressing effects, and greater consumption of ethanol. In summary, this is the first study to demonstrate a dose-response-relationship between adolescent nicotine exposure and changes in ethanol reward during adulthood.

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POS3-064

**LOCOMOTOR RESPONSES TO NICOTINE IN ADOLESCENT RATS PREDICTS OPIOID CONSUMPTION IN ADULTHOOD**

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Locomotor activity is an important behavioral index of nicotine’s action in the brain relating to the development of tolerance and sensitization. The current study evaluated locomotor assessment using brief observational ratings that were taken during an experiment that examined the behavioral effects of adolescent nicotine exposure and the relationship to subsequent opioid consumption. Nicotine [NIC; 6 mg/kg/day (High-NIC) and 12 mg/kg/day (Low-NIC)] or saline (SAL) was administered via osmotic minipump to 30 male and 30 female adolescent Wistar rats for 19 days, and was followed by 7 days of NIC/SAL cessation. Two observers used a 1-5 Likert scale to rate activity level during body weight measurements. Ratings occurred twice during NIC/SAL exposure and three times during cessation. Oral fentanyl consumption then was tested for 4 weeks when rats were adults. Females displayed higher levels of locomotor activity than did males during nicotine exposure and nicotine withdrawal. Locomotor behaviors decreased from NIC/SAL exposure to cessation, especially for High-NIC females. Locomotor activity was positively related to subsequent fentanyl consumption in adulthood for SAL females, Low-NIC males, and High-NIC males. Results are consistent with previous findings regarding locomotor activity following nicotine exposure and cessation during adolescence. Sex differences in sensitivity to nicotine during adolescence and how this sensitivity might predict opioid consumption in adulthood are discussed.

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POS3-065  
COINCIDENT INITIATION OF CIGARETTE SMOKING AND MARIJUANA USE AMONG U.S. TEENAGERS.

Wallace B. Pickworth*, Nicole C. Eid., Marianne van den Bree

Previous research has demonstrated that there is an association between cigarette smoking and marijuana use among teens (i.e. adolescents that smoke cigarettes are more likely to smoke marijuana). The National Longitudinal Study of Adolescent Health (Add Health) survey is a nationally representative sample of the U.S. high school and feeder school population. Within selected schools, all students in grades 7 through 12 were asked to participate. A randomly selected sample of 10,728 students (n=27,559) was invited for in-home interviews (Wave 1). Follow-up interviews (Wave 2) took place approximately one year later (n=17,913). Among the strongest predictors of cigarette smoking initiation and progression were the use of alcohol and other drugs. In the present report, the Add Health data set was analyzed for coincident changes in cigarette smoking and marijuana use. Cigarette smoking status evaluated at Waves 1 and 2 was: non-smoking, experimental smoking, and regular smoking. Marijuana use was defined as: no use, experimental (<10 occasions lifetime) or regular (>10 occasions). The percentage of non-smokers at Wave 1 who did not begin experimental or regular cigarette smoking at Wave 2 initiated experimental and regular marijuana was 5 and 1%, respectively. Among non-smokers that progressed to experimental smoking the prevalence of experimental (15%) and regular (4%) marijuana use was larger. Among non-smoker that progressed to regular smoking, 30% initiated experimental and 20% began regular marijuana use. Furthermore, initiation of cigarette smoking (experimental or regular) was associated with lower prevalence of marijuana discontinuation. These results emphasize the strong coincident use of cigarettes and initiation of marijuana smoking and suggest that cigarette use interferes with the discontinuation of marijuana smoking.

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POS3-066  
DAILY PATTERNS OF ALCOHOL, CIGARETTE, AND MARIJUANA USE IN ADOLESCENT SMOKERS AND NONSMOKERS

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Findings indicate that adolescent smokers use both a greater number and a greater quantity of substances than nonsmokers (Johnston et al., 2003). The current study aimed to (1) examine use rates over 30 days using Timeline Followback methodology (TLFB; Sobell & Sobell, 1992) and (2) assess daily and concurrent use of alcohol and marijuana in adolescent cigarette smokers and nonsmokers. 112 smokers (55 males, 57 females) and 50 nonsmokers (25 males, 25 females) ages 14 to 18 participated in the study. TLFB interviews were completed for all three substances. When examining the entire sample, adolescent smokers reported more frequent daily use of both alcohol and marijuana than nonsmokers. Of those smokers and nonsmokers who drank alcohol and used marijuana, smokers reported more frequent daily use of alcohol, but not marijuana. In examining daily use patterns, there were very few instances when adolescent smokers used alcohol but did not smoke cigarettes, and smokers used marijuana alone on more days than alcohol alone. One-fifth of the smokers used all three substances on the same day. No age or gender differences were found. Our findings support using TLFB methodology to assess adolescent substance use, as well as the strong connection between tobacco, alcohol, and marijuana use in adolescents.

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POS3-067  
SMOKING AND ALCOHOL USE AMONG HIGH SEX RISK STUDENTS IN CAPE TOWN, SOUTH AFRICA

Farzad Noubary*, Gary King, Ph.D., Pennsylvania State University; Alan Flisher, Ph.D., University of Cape Town; Carl Lombard, Medical Research Council of South Africa

Data were derived from the 1997 South African Community Epidemiology Network on Drug Use (SACENDU) school survey. Of 1,327 students, 332 were categorized as exhibiting high-risk sexual behavior, based on one or more of the following characteristics: sex before age 15, two or more partners, unprotected sex, or not knowing their last partner for more than 7 days. Preliminary results revealed that about 62% of the high sex risk (HSR) students were male. A higher proportion of men compared to women (57.7% vs 41.5%) had ever tried smoking and the difference was greater for ever consuming alcohol (72.1% vs 53.3%). In the multivariate logistic regression analysis, HSR boys were less likely than girls (OR=0.86, 95% CI = .76-.99) to have consumed cigarettes within the last 30 days while the reverse pattern was found for recent alcohol use (OR=1.19, 95% CI = 1.02-1.20). Compared to the high amenity group (4), individuals who had 3 or fewer household amenities were far less likely to have used cigarettes or alcohol in the past 30 days. The adult antisocial behavior scale indicated that students who had observed three incidents of antisocial behavior by adults were more likely to have smoked within the past 30 days (OR=2.45 95% CI= 2.02-2.97). Having witnessed two or three adult antisocial behaviors was also positively associated (ORs= 1.59, 95% CI = 1.28-1.97; 1.99, 95% CI = 1.64-2.40, respectively) with consuming alcohol in the past month.

MIRT Program of the Fogarty International Center and the National Institutes of Drug Abuse

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POS3-068  
SMOKING INITIATION AMONG YOUNG ADULTS: PREVALENCE AND RISK FACTORS

*Karen K. Saules, Minden B. Shadle, and Darryl Warner

Recent data suggest encouraging trends towards reduced rates of smoking initiation among youth, but little is known about smoking initiation among young adults (ages 18-24). It is possible that smoking onset may be delayed for certain groups, possibly those exposed to the unique psychosocial influences associated with the college lifestyle. We conducted a preliminary survey of psychosocial factors related to early (pre-age 18) versus late (age 18 or older) smoking onset in a sample of 296 college students (mean age = 20.6 years) across two large Midwestern universities. 88 (29.7%) students reported some smoking within the past month, although most (n=47) were smoking fewer than 5 cpd – a commonly observed pattern among college students. 43 participants were Early Onset Smokers (EOS; n=43). Late Onset Smokers (LOS; n=31) constituted 10% of the total sample; and 42% of smokers for whom age of onset was reported. EOS and LOS were compared on smoking behavior, weight concerns, and alcohol use. Not surprisingly, early onset smokers had significantly higher FTND scores (3.3 vs 1.8) and smoked more cigarettes per day (10.7 vs 6.9). Interestingly, EOS had significantly (p<.05) more friends who smoked, and were significantly more likely (p<.05) to use smoking to control weight and to admit to fears of weight gain upon quitting smoking. There was a trend (p=.10) for the LOS group to drink more heavily, but they did not report more negative consequences from drinking. Findings suggest that LOS constitute a large proportion of young adult smokers, at least among this college student population. The factors which promote and sustain smoking among this group are poorly understood and merit further investigation.

No Funding

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Data were derived from the 1997 South African Community Epidemiology Network on Drug Use (SACENDU) school survey. Of 1,327 students, 332 were categorized as exhibiting high-risk sexual behavior, based on one or more of the following characteristics: sex before age 15, two or more partners, unprotected sex, or not knowing their last partner for more than 7 days. Preliminary results revealed that about 62% of the high sex risk (HSR) students were male. A higher proportion of men compared to women (57.7% vs 41.5%) had ever tried smoking and the difference was greater for ever consuming alcohol (72.1% vs 53.3%). In the multivariate logistic regression analysis, HSR boys were less likely than girls (OR=0.86, 95% CI = .76-.99) to have consumed cigarettes within the last 30 days while the reverse pattern was found for recent alcohol use (OR=1.19, 95% CI = 1.02-1.20). Compared to the high amenity group (4), individuals who had 3 or fewer household amenities were far less likely to have used cigarettes or alcohol in the past 30 days. The adult antisocial behavior scale indicated that students who had observed three incidents of antisocial behavior by adults were more likely to have smoked within the past 30 days (OR=2.45 95% CI= 2.02-2.97). Having witnessed two or three adult antisocial behaviors was also positively associated (ORs= 1.59, 95% CI = 1.28-1.97; 1.99, 95% CI = 1.64-2.40, respectively) with consuming alcohol in the past month.

MIRT Program of the Fogarty International Center and the National Institutes of Drug Abuse

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POS3-069  YOUNG ADULTS AT RISK FOR FUTURE SMOKING

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Smoking prevalence among young adults (YAs) increased during the 1990s, but declined more recently. While some of the increase was from adolescents with high prevalence rates maturing to YAs, there is some evidence of continued smoking uptake during the YA years. Older initiators may be specifically targeted by tobacco industry advertising/promotions. The California Tobacco Survey of 2002 (a population-based telephone survey) interviewed YAs 18-29 years of age (n=9,364) identified from contacted households, and obtained detailed information on their smoking history. Altogether, 18.3±0.9% (+95%CI) of YAs were current established smokers (100+ cigarettes in lifetime, now smoke ‘everyday’ or ‘some days’). Of these, 40.2±2.3% were non-daily smokers, of whom 55.6±4.4% had never smoked daily for at least six months. A third (33.0±0.9%) of YAs were former established smokers (smoke now ‘not at all’). Of these, 27.9±3.5% quit in the past year, and 43.9±4.9% quit earlier but either smoked recently or were not sure they would stay quit. Another 29.3±1.1% of the YA population had experimented (1-99 cigarettes in lifetime). Of experimenters, 23.2±1.8% were current experimenters (in last month or ‘once in a while’), and 29.1±1.9% either smoked in the last year or did not rule out smoking again. Not counting current established smokers, over half (54.0±1.7%) of YAs who ever had a cigarette were at risk of future smoking. Of the 43.4±1.3% of the YA population of never-smokers, 9.0±1.2% did not rule out future smoking. The at-risk groups comprised 24.6±1.0% of the YA population. Together with current smokers, over 40% of California’s YAs provide fertile ground for tobacco industry efforts to get and keep smokers.

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POS3-070  PATHWAY TO ADULT SMOKING: EVALUATING CHILDHOOD AND ADOLESCENT FACTORS

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PURPOSE: To test a model of the effect of parent education, family factors, school success and choice of peers, on smoking behavior. PARTICIPANTS: 749 subjects evaluated at five points in time from 1975 (T1, mean age=5.57) to 1997 (T5; mean age 26.99, 92% white, 50% female). MEASURES: Self-tobacco use at T5, during the past five years and past two months, parental education and family influences at T2, unconventionality at T3, education expectation, aspirations, peer delinquency and drug use at T4. ANALYSIS: LISREL to test the model. RESULTS: Goodness-of-fit index equals to 0.86. Comparative fit index was 0.82. Parental education was positively associated with benign family influences at T2 (p<0.001) and education expectation at T4 (p<0.001). Benign family influences at T2 was negatively associated with unconventionality at T3 (p<0.001), which was negatively associated with educational expectations at T4 (p<0.01) and positively associated with peer delinquency and drug use at T4 (p<0.001). Emotional expectations at T2 was negatively associated with peer delinquency and drug use at T4 (p<0.001). Finally, educational expectations, aspirations, peer delinquency and drug use at T4 were negatively (p<0.001) and positively (p<0.001) associated with tobacco use at T5, respectively. CONCLUSION: Our model supports two major pathways. Adverse family forces influence the development of unconventional values that impact on poor school performance, increasing the likelihood of tobacco use either directly or indirectly through the affiliation with deviant peers. IMPLICATIONS: Factors in each time interval contribute to involvement in tobacco use. Therefore, interventions can be instituted at various points in time.

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POS3-071  PEER INFLUENCE, STAGES OF SMOKING INITIATION, AND LEVEL OF EXPERIENCE

Jennifer L. Malson, B.A.*, Janine C. Delahanty, M.A., Amanda L. Gmyrek, M.A., Steve Pitts, Ph.D., Carlo C. DiClemente, Ph.D., University of Maryland, Baltimore County; Robert Friedler, Maryland Department of Health and Mental Hygiene

Cigarette smoking is commonly measured in terms of prevalence rates, defined by level of experience with cigarettes. Prevalence rates do not include smoking-related attitudes and intentions, thus the Transtheoretical Model’s stages of smoking initiation may be a more sensitive assessment of smoking initiation among adolescents. Secondary data analyses of the Maryland Youth Tobacco Survey (MYTS, 2000) were conducted to compare smoking prevalence (i.e., level of experience) and stages of smoking initiation on peer influence variables. Participants were public school students, between the ages of 12 and 18 years (N=47,113) and the majority of the sample was Caucasian (69%). Students were classified according to five stages of smoking initiation and by level of experience: Experienced (i.e., no cigarette smoking in entire life), Exposed (i.e., smoked less than six cigarettes in entire life), and Experienced (i.e., smoked six or more cigarettes in entire life). There were significant differences and similar stepwise patterns for both classifications on peer influence variables (p’s < .001). However, odds-ratios and analyses of variance indicated considerably greater sensitivity and discriminability using stages of smoking initiation versus level of experience. Based on these results, the stages of smoking initiation represent a more sensitive measure than prevalence of cigarette smoking for understanding the role of peer influence on adolescent smoking initiation.

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POS3-072  PEER INFLUENCE, DEPRESSED MOOD AND TOBACCO USE: A LONGITUDINAL ANALYSIS

Anamara Ritt-Olson*, Jennifer Unger, Thomas Valenta, Elahe Nezami, Mitchell Earleywine, Chih-Ping Chou & C. Anderson Johnson

Many researchers have suggested that social environment and mood may interact to predict substance use, yet few directly test for the interaction of depression and peers. This study addressed several aspects of the social environment that may interact with negative affect to predict smoking: peer environment, peer influence and peer network structure. Four hypotheses were tested: 1) Depression will interact with perceived levels of peer use to predict smoking 2) Depression will interact with exposure to smoking peers to predict smoking 3) Depression will interact with being an isolate in a network to predict smoking and 4) The relationship between depression and smoking will be mediated by perception of drug use by peers. Middle school students (n=475) participated in two waves of data collection. The sample was ethnically diverse, 24% Asian, 26% White, 38% Latino, 5% multi-ethnic and 6% “Other”. Over 60% of the sample was female and by follow-up 16% had ever smoked. Perceived peer use, and exposure to smoking peers were both predictive of smoking a whole cigarette at time two. Higher levels of perceived mood were also predictive of smoking at time two when only ethnicity, acculturation, gender and SES were included in the model as covariates. In terms of moderation or mediation by peer influence, we only found support for hypothesis four. Perceived peer influence fully mediated the relationship between depression at year one and smoking at year two. These findings suggest that it is through peer relationships that depressed mood affects early smoking behavior.

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Several studies have identified social networks as deterrents of adolescent cigarette smoking. Few of these studies have focused on developing nations in Africa where youth smoking prevalence is increasing. A cluster sampling design was used to select 4000 students from 49 randomly chosen schools in Dar es Salaam, Tanzania. A self-administered questionnaire was employed to obtain socio-demographic and tobacco use information. Of the 3823 students for whom valid data were available, 50.4% were male and the mean age was 14.7 (SD=1.7). Preliminary results indicated 5.7% of girls reported ever smoking versus 10.9% of boys. Of those who ever smoked, 43% were 12 years old or less when they first used tobacco and 94.3% smoked by age 14. Results also revealed that 8.2% of boys and 4.0% of girls reported smoking in the past 30 days. Logistic regression (LR) results showed that students whose father (OR=2.7, p< .001), mother (OR=2.8, p< .001), or close friend (OR=4.8, p< .001) used tobacco products were significantly more likely to be ever smokers. LR results also indicated that students’ opinions of their parents’ reaction to smoking was marginally significant (OR=0.72, p=.08) in predicting tobacco use in the past 30 days. These results may be useful in developing prevention and intervention programs for adolescents in Tanzania based on the smoking practices within their social network.

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PO3-074

SMOKING AND DEPRESSION AMONG YOUTH IN CAPE TOWN, SOUTH AFRICA

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The association of smoking and depression has been documented among youth in national samples in the U.S. and other countries. However, the relationship has not been established among South African youth. This paper examines the association between depression and smoking among South African youth in Cape Town. The analysis consisted of 620 students who completed a questionnaire in 1997 on sociodemographic characteristics, smoking, and depression. Separate general linear model procedures were conducted by gender to examine the association between scores on the Beck Depression Inventory and cigarette smoking status, controlling for racially classified social groups, socioeconomic status, and grade level. Primary analyses revealed that among males, depression was not associated with smoking status (p ≥ .01). However, a significant association was found among females (p < .01). The results provide useful insights for smoking interventions and support the need to incorporate mental and emotional health education strategies into programs, at least among female youth in South Africa.

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PO3-075

STABILITY AND CHANGE IN NICOTINE DEPENDENCE AMONG ADOLESCENTS WITH PSYCHIATRIC COMORBIDITY

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Little is known about the influence of comorbid psychopathology on the expression or longitudinal course of DSM-IV symptoms of nicotine dependence among adolescents. We used a Rasch item response model approach to examine longitudinally the psychometric stability of nicotine dependence (ND) as measured by a structured nicotine dependence interview and by the Modified Fagerstrom Tolerance Questionnaire (mFTQ). Specifically, we estimated the influence of psychiatric diagnoses on the level of dependence associated with each ND symptom and the typical order in which individual ND symptoms are likely to be reported. Having an affective and disruptive behavioral disorder independently predicted higher levels of DSM-IV ND at baseline and throughout the one-year follow-up. mFTQ scores were consistently higher only among individuals with substance use disorders. There was no evidence of gender or disorder-specific response bias for any individual ND symptom. Although, teens with affective disorders and girls gave more atypical response patterns across DSM-IV ND and mFTQ symptoms, respectively. During follow-up, the sample as a whole showed a slight decrease in levels of smoking, levels of DSM-IV ND, and mFTQ scores. However, individual levels of DSM-IV ND were highly variable across time and on average baseline, 6- and 12-month estimates were only moderately correlated, r = .23. Individual scores on the mFTQ were relatively more stable across time with average correlation of r = .40. These analyses provide support for the stability of the ND construct and suggest potential differential correlates for ND as measured by DSM-IV and mFTQ.

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MODELING DEVELOPMENT OF DEPRESSIVE SYMPTOMS IN ADOLESCENTS: ASSOCIATION WITH PAST AND FUTURE SMOKING

Daniel Rodriguez, Ph.D.*; Howard B. Moss, M.D.; Janet Audrain-McGovern, Ph.D.; Department of Psychiatry, University of Pennsylvania

Cross-sectional and longitudinal studies have found a positive association between smoking and depression in adolescents, however the direction of the relationship remains unclear. We sought to clarify this relationship by assessing the possibility of multiple patterns (trajectories) of depressive symptoms, and by assessing the relationship of trajectory membership to past and future smoking with a prospective sample of 1075 adolescents, followed from grade 9 through 11. We employed a factor mixture modeling method, General Growth Mixture Modeling (GGMM) since GGMM permits the identification of trajectories representing subpopulations of adolescents, the characterization of trajectories on covariates, and the prediction of future smoking status for trajectory members. Three trajectories were identified, representing increasing, decreasing, and persistently low levels of depressive symptoms. Adolescents with greater smoking at baseline were 33% more likely to have increasing rather than low depressive symptoms. Adolescents with either increasing or decreasing symptoms were twice as likely to smoke in 11th grade as adolescents with persistently low depressive symptoms. The results suggest the existence of two distinct subpopulations of adolescents at risk for both depressive symptoms and future smoking, which may help explain the inconsistent findings regarding the temporal relationship between depression and smoking.

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SIBLING EFFECTS ON SMOKING IN ADOLESCENCE: EVIDENCE FOR SOCIAL INFLUENCE FROM A GENETICALLY-INFORMATIVE DESIGN

Cheryl Slomkowski, Ph.D.*; Richard Rende, Ph.D., Scott Novak, Ph.D., Elizabeth E. Richardson, Ph.D., and Raymond Niaura, Ph.D., Brown Centers for Behavioral and Preventive Medicine

We apply theoretical models derived from our work on deviancy to examine specific social processes that may underlie sibling influence on smoking, in a genetically-informative design that provides control for genetic relatedness. Adolescent sibling pairs (ranging in genetic relatedness from 100% to 0%) participating in the National Longitudinal Study of Adolescent Health completed self-report measures on smoking frequency, social connectedness with their sibling, peer smoking, and parental smoking at two time points separated by a 1-year interval. Specialized regression models (DeFries-Fulker analysis) revealed significant social influences on high levels of depressive symptoms. Individuals with high depression scores, and their co-siblings, also had elevated levels of smoking. Such elevation was moderated in part by shared environmental effects on depression, but not genetic influences. The results provide support for the proposition that family-based interventions aimed at adolescent depression may also target smoking behavior.

This work was supported by NIH grant MH 01559; The National Longitudinal Study of Adolescent Health was supported by grants P01-HD31921.

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SHARED ENVIRONMENTAL EFFECTS ON HIGH LEVELS OF DEPRESSIVE SYMPTOMS IN ADOLESCENCE: A PATHWAY TO SMOKING?

Richard Rende, Ph.D.*; Cheryl Slomkowski, Ph.D., Laura Stroud, Ph.D., Elizabeth E. Richardson, Ph.D., and Raymond Niaura, Ph.D., Brown Centers for Behavioral and Preventive Medicine

Behavioral genetic studies have produced the novel finding that high levels of depressive symptoms in adolescence show robust shared environmental effects, which operate against a backdrop of genetically-influenced individual differences. We expand this perspective to determine if such shared environmental effects extend to smoking frequency in adolescence, given the often noted associations between depression and smoking. A sample of 1,421 sibling pairs (ranging in genetic relatedness from 100% to 0%) participating in the National Longitudinal Study of Adolescent Health completed self-report measures of depressive symptoms and smoking frequency at two time points, separated by a 1-year interval. Specialized regression models (DeFries-Fulker analysis) revealed significant shared environmental effects on high levels of depressive symptoms. Individuals with high depression scores, and their co-siblings, also had elevated levels of smoking. Such elevation was moderated in part by shared environmental effects on depression, but not genetic influences. The results provide support for the proposition that family-based interventions aimed at adolescent depression may also target smoking behavior.

This work was supported by NIH grant MH 01559; The National Longitudinal Study of Adolescent Health was supported by grant P01-HD31921.

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POS3-081

DO AS I SAY?: SMOKING-SPECIFIC SOCIALIZATION BY SMOKING AND NON-SMOKING PARENTS.

Jenna Goesling*, Clark Presson, Laurie Chassin, and Steven J. Sherman.

Parents are potentially important antismoking influences for their adolescents. However, although most parents want their children not to smoke, their ability to effectively deliver antismoking messages is complicated when parents themselves smoke because smoking parents may send “mixed” messages. To assess this, we examined multiple dimensions of antismoking parenting among parents and their children. Participants were adolescents whose parent was in a longitudinal survey (Chassin et al., 2002). We assessed three dimensions of smoking-specific parenting: value (on the child’s nonsmoking), affect (associated with the child’s smoking) and behavioral actions (talking and acting to stop the child’s smoking), with respect to both cigarettes and marijuana (for comparative context). Responses were analyzed in a 2 (drug) by 3 (parenting dimension) by 2 (parent smoking status) MANOVA, which showed a significant 3 way interaction. For both drugs and regardless of smoking status, parents endorsed lower levels of behavioral action than of either value or affect, and this was confirmed by adolescent report. Thus, parents professed more value and affect about adolescent cigarette and marijuana use than their reported level of behavioral action. However, smoking mothers showed a further discrepancy between their levels of value and affect (Ms=4.70 vs. 4.27) about their child’s smoking, whereas nonsmoking mothers showed consistency between values and affect (Ms=4.89 vs. 4.80). This pattern was confirmed by adolescent report and was not present for marijuana items. Thus, inconsistency between smoking parents’ values and their affect about their child’s smoking may result in less clear and effective anti-smoking messages.

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POS3-082

GENERAL AND SMOKING-SPECIFIC PARENTING AS PREDICTORS OF ADOLESCENT SMOKING ONSET

Laurie Chassin, Clark Presson, Jennifer Rose, Steven Sherman, Matthew Davis, and Jeremy Gonzalez

Although most research on adolescent smoking has focused on peer influences, there has been recent interest in parental influences, particularly because family-based interventions may be useful in deterring adolescent smoking. However, within these interventions, it is unclear whether it is sufficient to focus on parents’ specific rules and socialization about smoking or whether it is necessary to modify broader parenting styles of support and discipline (which may be a more difficult goal to attain). Accordingly, we tested whether general and smoking-specific parenting prospectively predicted adolescent smoking over two-years. Participants were 382 adolescents (mean age=12.5) and their parents. Self-reported smoking at baseline was validated with CO in expired air (kappas ranged from .73 for adolescents to .91 for mothers, all ps<.001). Logistic regressions showed that both mother and child reports of general parenting prospectively predicted smoking (over and above parent smoking). Authoritative families (high support and discipline) showed the most smoking onset, and disengaged families (low support and discipline) showed the most. The effects of smoking-specific parenting interacted with parents’ smoking. Adolescents’ perceptions of smoking-specific parenting were protective for those with nonsmoking parents, but was unrelated to smoking if the parent(s) smoked. Although general parenting and smoking-specific parenting were related (i.e., authoritative parents also showed the most anti-smoking parenting), smoking-specific parenting could not account for the protective effects of authoritative parenting. Thus, although both general and smoking-specific parenting had significant unique effects on adolescent smoking, the findings suggest that intervening only in smoking-specific parenting may be insufficient to deter adolescent smoking, particularly among families with a smoking parent.

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POS3-083

MISSED OPPORTUNITIES FOR REDUCING TOBACCO USE AMONG ADOLESCENTS: PHYSICIAN AND DENTIST COUNSELING PRACTICES

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Physicians are in a unique position to impact adolescent tobacco use. Most children visit a physician on an annual basis and adolescents report their physician’s advice is influential in their health practices. Studies of physician treatment of tobacco use among adolescents have depended primarily on physician reports and to date there are no studies of tobacco use treatment practices among dentists who treat teens. The purpose of this study was to assess determinants of physician and dentist counseling for tobacco use and analyze the impact of advice to quit on quit attempts and cessation in the past 12 months. Data was analyzed from the 2000 National Youth Tobacco Survey, an anonymous self-administered questionnaire. This survey was administered to 35,828 students in grades 6 to 12 in 324 schools across the country. Most youth (72%) reported having visited a health care provider in the previous 12 months. Among students who visited a health care provider within the previous year, 35% reported a physician talked to them about the dangers of tobacco use and 22% reported a dentist offered a similar message. Among adolescents who are current smokers, 21% received advice to quit from a physician and 14% from a dentist. Advice to quit and preventive counseling differed significantly by ethnicity but not by grade. Physician advice to quit was associated with increased cessation activity after adjusting for possible confounders. The results indicate a missed opportunity for health care providers to influence tobacco use among adolescent patients, particularly given the association between advice to quit and cessation activity. More intensive strategies are needed to increase compliance with effective treatment guidelines.

No Funding

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POS3-085

HOUSEHOLD SMOKING BANS AND ADOLESCENTS’ ATTITUDES ABOUT SMOKING, SUSCEPTIBILITY TO SMOKING, AND TOBACCO USE

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Objectives: Household smoking bans (HSB) are recommended to reduce children’s exposure to environmental tobacco smoke (ETS) and decrease their tobacco use, but may have broader benefits. They might discourage smoking initiation by decreasing the visibility of smoking and fostering antismoking attitudes and norms among youths. We tested these associations. Methods: A telephone survey of a random sample of 3,863 Massachusetts adolescents (12-17 years; 84% response rate) assessed respondents’ attitudes about smoking, susceptibility to smoking, and tobacco use. The association of these outcomes with HSBs in the youths’ home was tested in multivariate analyses that adjusted for household-level clustering and individual and environmental characteristics. Results: 71% of all youths and 49% of youths who lived with smokers reported having an HSB. Youths who had an HSB were more likely to perceive a lower adult smoking prevalence (OR 2.295% CI 1.8-2.7;p<0.001), a lower youth smoking prevalence (OR 1.395% CI 1.0-1.6;p=0.035), a greater adult disapproval of smoking (OR 2.00% CI 1.5-2.7;p<0.001), were more likely to report being bothered by ETS (OR 1.595% CI 1.2-1.9;p<0.001), and to perceive an occasional cigarette as harmful (OR 1.495% CI 1.1-1.8;p=0.007). They were less susceptible to smoking initiation (OR 0.795% CI 0.5-0.8;p<0.001), were less likely to have ever smoked (OR 0.795% CI 0.6-0.9;p<0.007), or to be a current (past 30-day) smoker (OR 0.795% CI 0.5-0.96;p=0.03). Conclusions: Youths living in households with HSBs had more negative attitudes about smoking, less susceptibility to smoking initiation, and a lower likelihood of smoking. These data suggest additional reasons to promote HSBs to parents.

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POS3-087 ADOLESCENT MOTIVES FOR QUITTING SMOKING


Little is known regarding factors that motivate adolescent smoking cessation. The present study reports on the development of a measure of adolescent motives for quitting smoking. Items and questionnaire format were derived from focus groups with adolescent smokers. The resulting measure was administered to 110 adolescent smokers, on average 16.8 (1.1) years old, 45% female, and 71% White. Each of the 27 items was scored on a 5-point Likert-type scale (unimportant to extremely important) reflecting importance for quitting. Initial analyses resulted in the removal of 12 items. A Principal Axis Factor Analysis constrained to 2 factors with Promax rotation was conducted with the remaining 15 items. The analysis produced 2 interpretable factors, (1) intrapersonal consequences (9 items; 33.5% of variance), and (2) interpersonal consequences (6 items; 13.9% of variance). The interfactor correlation was .42. Internal consistency was alpha = .86 for factor 1 and alpha = .73 for factor 2. Both factors were significantly correlated with desire to quit and number of smoking-related consequences. In addition, factor 2 correlated significantly with intentions to quit, likelihood of being a smoker in 1 year, length of smoking history, current smoking, and peer and parental attitudes towards teen smoking. Factor scores were similar for males and females, however correlations with validation variables varied by gender. The present results provide initial support for the validity of this measure. Increased understanding of adolescent motives for smoking cessation may serve to elucidate the cessation process and serve to inform intervention design.

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POS3-088 DO ADOLESCENTS’ SMOKING EXPECTANCIES PREDICT ESCALATION AND CESSATION?

Sarah K. Wahl, M.A.*, Lindsey R. Turner, Ph.D., and Robin J. Mermelstein, Ph.D., University of Illinois at Chicago

Although outcome expectancies have been related to smoking behavior among adults, less attention has been given to expectancies about smoking among adolescents at differing levels of smoking experience. This study reports the psychometric properties and predictive validity of an expectancy scale across two samples of adolescents. Sample one (N=349) consisted of high school students (54% female) who were regular smokers enrolled in a cessation program. Sample two (N=279) consisted of 8th and 10th grade early experimenters (55% female) involved in a natural history study of smoking trajectories. A principal component analysis of a 15-item expectancy scale yielded 5 factors (Taste, Weight Control, Boredom, Negative Affect, and Energy), each with high internal consistency (coefficient alphas above .76), and accounting for 75% and 81% of the total variance for each sample, respectively. The overall expectancy scale correlated significantly with baseline smoking rates, student’s self-rated addiction levels and the Nicotine Dependence Syndrome Scale for both samples. Expectancies were significantly higher among sample one than sample two. In sample one, expectancies that smoking managed weight and relieved boredom significantly predicted cessation six months later. In sample two, students whose smoking escalated over 18 months had higher overall expectancies at baseline compared to those who tried smoking and did not escalate. These findings support the predictive validity of expectancies both predicting escalation and cessation. Implications for the importance of expectancies in understanding adolescent smoking behavior will be discussed.

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POS3-089 PREVENTING TOBACCO DEPENDENCE IN ADOLESCENT SMOKERS: THE DEVELOPMENT OF A BRIEF MOTIVATIONAL INTERVIEWING INTERVENTION

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Tobacco use is the leading preventable cause of death in the U.S. Preventing smokers from becoming dependent by intervening during adolescence may be most effective in decreasing smoking-related disease and death. However, adolescent smoking cessation programs have low success rates, partly due to poor retention. One brief therapeutic technique, motivational interviewing (MI), has been successful in decreasing adolescent substance use in clinical settings and reducing adolescent smoking in a hospital setting. MI is a client-centered technique that combines personalized feedback regarding the consequences of substance use with a non-confrontational, empathic style. Here we present the rationale and description of a novel, brief intervention whose content and design were tailored specifically for adolescents. The intervention, a one session MI targeted at reducing adolescent smoking in a non-clinical outpatient setting, is part of a larger study, including psychosocial assessment and a laboratory smoking session during which physiological data are recorded. Information from the psychosocial assessment (i.e., family medical history, stage of change, smoking triggers, and withdrawal symptoms) and changes in physiological measures due to smoking (i.e., increased heart rate and breath carbon monoxide) are recorded and shared with the adolescent during the intervention. The intervention consists of a decisional balance exercise, discussion regarding short- and long-term consequences of smoking (including personalized feedback), discussion of current attitudes towards smoking, and tips for reducing smoking. Adherence-competence scales were developed to ensure the integrity of the intervention. This presentation will focus specifically on the development and implementation of the MI intervention; study outcomes will be discussed in future years.

This work was supported by the Virginia Tobacco Settlement Foundation.

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POS3-090

ASCENT: THE DEVELOPMENT AND EVALUATION OF AN ADOLESCENT CESSATION PROGRAM


Smoking is reported to kill more people in the United States than AIDS, car accidents, alcohol, homicides, illegal drugs, suicides, and fires combined accounting for more than 400,000 deaths annually. Despite National efforts to prevent young tobacco use, it is estimated that more than 2,000 adolescents become established smokers (defined as reaching a lifetime level of 100 cigarettes) on a given day. Current research suggests that smoking cessation interventions specifically designed for adolescents are limited. In response to the Nation’s need for the development of efficacious youth cessation programs, Danya International, Inc., with funding from the National Institute of Drug Abuse (NIDA) developed a multifaceted smoking-cessation program called Adolescent Smoking Cessation Escaping Nicotine & Tobacco (ASCENT). Based on the transtheoretical model of Stages of Change, ASCENT provides youth (between the ages of 14 and 18) with cognitive behavioral strategies to assist them in quitting smoking. The intervention includes a six-session curriculum, teen workbook, motivational video entitled The Last Drag, and facilitator’s video. Both an outcome evaluation and a process evaluation were conducted to examine the effectiveness, feasibility, and acceptability of the program. 130 students from nine Maryland High Schools participated in these studies. Outcome measures evaluated Smoking status, Stage of Change, Addiction, and Withdrawal. Product development, including a description of how we developed the Latino version of ASCENT, and twelve-month follow-up data (outcome evaluation only) will be presented. In addition, lessons learned from the process evaluation will be presented to further understand implementation of school based cessation programs in school settings.

Development and evaluation of ASCENT was supported by the National Institute on Drug Abuse Small Business Innovation Research Grant mechanism. Funding was received for both phase I and phase II of product development

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POS3-091

ONE YEAR OF AN ENVIRONMENTAL HIGH SCHOOL-BASED TOBACCO CONTROL PROGRAM: ACADIANA COALITION OF TEENS AGAINST TOBACCO (ACTT)

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ACTT is a 5-year randomized controlled cohort study of high school students in south central Louisiana. At 9th grade baseline and prior to randomization (n=4807), overall 30-day prevalence of cigarette smoking was 25.1%. Using the school as the unit of analysis (n=20) and adjusting for ethnicity at baseline, 30-day prevalence of cigarette smoking for control vs intervention schools was 23.4% vs. 20.8%. After one intervention year and adjusting for ethnicity and baseline prevalence, 30-day prevalence for control vs intervention schools was 28.4% vs. 24.5% (p=0.11). After one intervention year, the difference in prevalence between control and intervention schools increased by 1.3%. After adjusting for baseline 30-day smoking and group status, Caucasians were 3.5 times more likely to smoke in 10th grade than African Americans during the 30 days prior to the survey. The ACTT intervention during 10th grade consisted of school environmental supports only, for example, posters, public service announcements, and interactive hallway activities. ACTT is a new generation of school-based tobacco control program in which classroom availability for presentation of a tobacco-use prevention curriculum is low or nonexistent. These data show that behavioral health promotion programs can show positive trends after only one year without using teacher and/or classroom time. Implications for future school-based health education programs are significant.

Study was supported by Louisiana Board of Regents grant #HEF(2000-05)-09.

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POS3-092

IMPACT OF SCHOOL MEDIA IN A HIGH SCHOOL TOBACCO CONTROL PROGRAM: ACADIANA COALITION OF TEENS AGAINST TOBACCO

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ACTT tobacco-use prevention messages are delivered to a high school cohort through posters and public service announcements (PSAs). PSAs written by ACTT staff were aired weekly by students. Posters varied across semesters; some developed by a marketing firm and others obtained from anti-smoking groups. At the end of three semesters, fall 2001 (10th grade), spring 2002 (10th grade) and fall 2002 (11th grade), surveys were administered to evaluate media impact (n=1673, 1823, and 1552, respectively). Students who reported seeing posters across the three semesters were 77%, 83% and 77%. Less than half (44%) of students reported hearing PSAs in fall 2001 but this increased to 53% in spring 2002 and 66% in fall 2002. Surveys included bogus themes for reliability. Of students who reported seeing posters, 90% in fall 2001, 87% in spring 2002, and 40% in fall 2002 correctly identified the poster theme(s) for those semesters. Of the students who reported hearing PSAs, 87%, 83% and 92% across the three semesters correctly identified at least one message. An average of 33% (33%, 28%, and 39%) of students indicated posters helped them not to smoke. An average of 10% (9%, 7%, and 14%) of students reported posters helped them to quit smoking. Posters are working well with students. PSAs were not well noticed initially, but improved in the following two semesters. Evaluating media impact is important for strengthening school-based media campaigns.

Study supported by Louisiana grant #HEF(2000-05)-09.

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POS3-093

ASSOCIATION OF RETAIL TOBACCO MARKETING WITH ADOLESCENT SMOKING

Lisa Henriksen, Ph.D. (*), Stanford School of Medicine, Ellen C. Feighery, R.N., M.S., Public Health Institute, Yun Wang, M.S., Stephen P. Fortmann, M.D., Stanford School of Medicine

The tobacco industry spends more on point-of-purchase marketing (a record $9.5 billion in 2001) than on all other forms of cigarette advertising combined ($1.7 billion in 2001). Stores saturated with tobacco ads and promotions constitute a significant public health concern, especially for youth. Three out of four teenagers shop at a convenience store at least once a week and stay twice as long as adult shoppers. This study examined adolescents’ exposure to retail tobacco marketing and its association with self-reported smoking. Data from a school-based survey of 2,125 middle school students in central California were analyzed using multi-level modelling to control for school clustering. Adolescents were routinely exposed to retail tobacco marketing: 68% of sixth, 66% of seventh, and 65% of eighth graders said they visited a convenience, liquor, or small grocery store on their way to or from school at least once a week. Even after controlling for social influences to smoke and other risk factors, weekly or more frequent exposure to retail tobacco marketing increased the odds of ever smoking by 54% (1.09;2.08) – nearly as much as exposure to a parent or household member who smokes. Relative to other forms of tobacco marketing, retail tobacco marketing exposure was second only to owning a cigarette promotional item in increasing the odds of ever smoking. These results suggest youth smoking rates may benefit from policies or other interventions that reduce adolescents’ exposure to widespread tobacco marketing in stores.

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POS3-094  UNDERSTANDING THE EFFECTS OF STATE COUNTERINDUSTRY MARKETING CAMPAIGNS ON YOUTH TOBACCO USE

James C. Hersey, Ph.D.*, Jeff Niederdeppe, M.A., Shu Wen Ng, Paul Mowery, M.A., Matthew Farrelly, Ph.D., RTI International; Jane A. Allen, M.A., and M. Lyndon Haviland, Dr.P.H., American Legacy Foundation

This study assessed the effects of state media campaigns emphasizing counterindustry messages on youth tobacco use — beyond the effects of price, secular trends, tobacco control efforts, and the national truth campaign. We compared rates of youth smoking in three groups of states: (1) states with long-funded counterindustry campaigns (CA, FL, MA), (2) states that recently funded counterindustry media campaigns (IN, MN, MS, NJ), and (3) other states. We analyzed five large national telephone surveys between 1999 and 2003, controlling for age, gender, and race/ethnicity. Between 1999 and 2003, current smoking and established smoking significantly decreased, and the proportion of youth who were closed to smoking significantly decreased, in states with long-funded or with newly funded campaigns, compared to other states. Effects were strongest for high school youth. State campaigns appear to prime or make more salient beliefs about the negative effects of tobacco and industry practices. Results highlight the value of continued funding of state countermarketing efforts.

This research was funded by the American Legacy Foundation

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POS3-095  ETHNIC DIFFERENCES IN ADOLESCENT PERCEPTIONS OF TOBACCO ADVERTISING

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It is assumed that adolescents who recognize advertising influences demonstrate resistance to tobacco advertisements and promotions. However, empirical research has not addressed this issue. The lack of research is significant because this concept is being incorporated into prevention programs. The purpose of the current study is to assess the extent to which adolescents recognize that cigarette advertisements influence youth to smoke and to determine whether any ethnic differences in perceptions of advertising exist. The data for the study were drawn from the Memphis Health Project, a large-scale longitudinal study evaluating smoking onset in a biracial sample of adolescents. The population consisted of 4800 Memphis youth; 55.9 percent were female. The majority of students, 82.9 percent, were African Americans, yielding a rich database for exploring ethnic differences. A little over 17 percent of the students reported owning an item with a tobacco symbol on it. In response to the question, “How much does cigarette advertising influence young people to smoke,” 16.5 percent said “not at all,” 27.1 percent indicated “a little,” and 27.8 percent of the adolescents thought advertisements influenced young people “a fair amount.” The remaining 28.5 percent of the participants believed that cigarette advertising influenced youth “quite a bit.” An analysis of variance indicated significant differences in perceptions by ethnicity. Whereas 30.8 percent of the African American youth believed that advertising influences young people quite a bit, only 15.8 percent of the Caucasian adolescents provided the same response. Other characteristics are also explored as predictors of the recognition of tobacco advertising influence.

This study was supported by NHLBI grant HL050723-11.

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POS3-096  CIGARETTE BRAND APPEARANCES IN MOVIES FROM 1996 TO 2000

Anna M. Adachi-Mejia, Ph.D.*, Jennifer J. Gibson, M.S., James D. Sargent, M.D., Linda T. Titus-Ernstoff, Ph.D., Madeline A. Dalton, Ph.D., Dartmouth Medical School

Problem/Objective: Previous studies have shown that viewing smoking in movies promotes smoking initiation among adolescents and marketing experts openly acknowledge that celebrity endorsements can “make or break” a brand. In 1998, the Master Settlement Agreement (MSA) prohibited tobacco companies from paying for movie brand placement. This study compared cigarette brand appearances in films pre- and post-MSA. Methods: We are analyzing the top 100 US box-office films per year from 1996 to 2000 to identify the frequency and type of cigarette brand placement. Movies released between 1996-1998 were categorized as pre-MSA; movies released between 1999-2000 were categorized as post-MSA. Results: Preliminary analyses showed that 26% of the movies contained a total of 286 cigarette brand appearances. Pre-MSA, there was an average of 63 brand appearances per year compared to 98 appearances in 1999 movies. The most frequently appearing brands were Marlboro (41.6%), Camel (11.7%), Kool (5.5%), Newport (4.5%). Marlboro and Camel had the most notable changes post-MSA. In pre-MSA movies, there was an average of 25 Marlboro appearances and 7 Camel appearances per year. In the year following the MSA, there were 45 Marlboro and 12 Camel appearances. Total seconds of brand exposure also increased from an average of 27 minutes per year pre-MSA to 56 minutes in 1999. Final analyses will include movies from 2000 to confirm this upward trend. Conclusions: After the MSA, the number of cigarette brand appearances in movies increased markedly. Despite restrictions on advertising, the cinema is increasingly used to promote cigarettes.

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POS3-097  SMOKING CHARACTERS IN MOVIES INCREASE AUTOMATIC IDENTIFICATION WITH SMOKING: AN EXPERIMENTAL STUDY USING IMPLICIT MEASURES

Sonya Dal Cin*, Geoffrey T. Fong, Bryan Gibson, & Mark P. Zanna

Portrayals of smoking in film may promote smoking among young people. Correlational studies demonstrate relations between smoking in film and smoking status, susceptibility to smoking, and initiation. We use recent developments in social psychological theory and methodology to demonstrate that viewing smoking in film has a causal effect on identification with smoking. Fifty-four male undergraduates participated at the University of Waterloo, Ontario, Canada (N=31) and at Central Michigan University, Michigan, U.S.A. (N=23). Smokers and non-smokers were randomly assigned to view one of two clips from the same film: one in which the male protagonist smokes, or one in which he does not. Participants then completed a questionnaire measuring the extent to which they identified with the protagonist. We measured each participant’s associations of the self with smoking using the Implicit Association Task (IAT), a computer-based reaction-time task. The IAT is an implicit measure, which assesses more automatic responses and is therefore less prone to biases found in explicit measures (e.g., surveys). Overall, smokers had stronger associations of self with smoking than did non-smokers. In the U.S.A., participants who viewed the smoking clip had increased associations of smoking with the self, to the extent that they identified with the protagonist: the more they reported identifying with the protagonist, the more they reported identifying with smoking. This effect was found for both smokers and non-smokers. Standard self-report measures of smoking-related attitudes were unaffected. These results demonstrate that effects of smoking in film are subtle but important, and that implicit measures may be particularly useful in detecting the full range of these effects.

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POS3-098

PHYSIOLOGICAL AND BEHAVIORAL RESPONSES TO POSITIVE AND NEGATIVE SUBLIMINAL SMOKING RELATED IMAGES: DISTINGUISHING BETWEEN GROUPS.

Laurence Van Hanswijck de Jonge, Msc* and Michael Gormley, Ph.D. Department of Psychology, Trinity College, Dublin 2, Ireland

A number of studies across different addictive behaviors have supported the proposition that cognitive biases pertaining to an addictive behavior may operate at automatic levels. There seems to be a pre-conscious bias for processing, or attending to, addiction-related information associated with addictive behaviors. These biases tend to vary for positive vs. negative addiction cues and between heavy and light users of an addictive substance. To date, studies in addiction have mainly used implicit paradigms as an indication of automatic preconscious processing. However, these studies are argued to not be outside of awareness and as such could be argued not to be pre-conscious. Smoking studies to date have not distinguished between heavy and light smokers (as in alcohol studies) and have relied on individual subjects endorsement of positive or negative words. This study implements a subliminal (pre-conscious) study design, distinguishing between ex-smokers (N=17), never-smokers (N=14) light-smokers (N=17) and heavy smokers (N=15) on reaction time and heart rate variance (HRV) measures using positive and negative smoking images. Results indicate reaction time to differ significantly between negative images (M= 610.31, SD = 96.19) and neutral images (M = 598.73, SD = 86.26; t(2, 61) = 2.57, p < 0.01). HRV showed a between group difference (F(3,52)= 4.73, p <0.005), indicating light smokers (M = -0.003, SD = 0.013) to have a significantly lower HRV compared to heavy smokers (M = -0.017, SD = 0.013). These results are discussed in terms of automatic processing and the underlying systems subliminal and implicit studies tap into as well as the importance of physiological inclusion in studies which study automatic processing.

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POS3-099

VARIABILITY OF POSITIVE AND NEGATIVE RATINGS OF SMOKING RELATED IMAGES ACROSS NEVER-SMOKERS, EX-SMOKERS, LIGHT-SMOKERS AND HEAVY-SMOKERS.

Laurence Van Hanswijck de Jonge, Msc* and Michael Gormley, Ph.D. Department of Psychology, Trinity College, Dublin 2, Ireland

To date nicotine-related studies have indicated positive information regarding smoking to be more available and accessible in smokers, suggesting that positive propositions may be better organized and more tightly interconnected in memory. Unfortunately, due to the personalized nature of addiction, studies have been limited to general smoking cues or individual word endorsements, limiting the flexibility of study designs and the understanding of underlying processes. Positive and negative smoking-related images would allow the opportunity to study the impact of images vs. words as well as creating a validated database for more in-depth and extended research. 73 digital images were rated for smoking content and also on a scale addressing emotional content. Completed data from 145 subjects (light smokers (n = 28), heavy smokers (n =16), ex-smokers (n =32) and never-smokers (n = 69)) were analyzed. Using the mean response for all the participants, the pictures were rank ordered. The average score of the ten most positive and the ten most negative smoking-related pictures produced an average score for positive and negative pictures respectively. A significant group effect was found on the positive smoking scale (F(3,141) = 8.69, p < 0.001). A post-hoc Bonferroni test indicated that the light-smoking group (p<0.0001) and the heavy-smoking (p<0.01) group scored pictures as significantly more positive than the never-smokers. These results were not found on the negative smoking pictures or on either of the positive or negative emotion scales. This adds to the understanding of mechanisms which differentiate different addiction groups in addition to providing a validated tool to study a broader range of research designs.

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POS3-100

NICOTINE CRAVING IN CURRENT AND ABSTINENT SMOKERS: INFLUENCE OF VISUAL AND ENVIRONMENTAL CUES

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Drug craving, defined as a motivational desire to use a drug, is a hallmark of compulsive drug-taking behaviour. It is a prominent feature of tobacco withdrawal syndrome and may predict relapse. We measured subjective craving (using a 0-100 visual analog scale) in five different smoker groups: heavy smokers (>10/day), light smokers (6 months “maintenance” phase), and never smokers. Craving was measured in both a neutral environment (experimental lab) and a cued environment (mock bar) under overnight (8-10 hours), 1-, and 3-hour withdrawal conditions. Neutral and smoking cues were presented in a random order in each environment. Preliminary results suggest that light smokers reported increased craving in the bar vs. the lab (p<0.01), and following presentation of visual smoking cues in the bar (p<0.01) but not the lab (NS). Heavy smokers reported an increase in craving only when moved into the bar (p<0.01). Recently abstinent subjects also reported increased craving following the move to the bar (p<0.08). Smokers in the “maintenance” stage reported craving similar to never smokers in both environments, suggesting this group is no longer sensitive to visual or environmental smoking cues. These data suggest the importance of environmental cues in nicotine craving in both current smokers and recently abstinent smokers.

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POS3-101

MOTIVATION AND REACTIVITY TO SMOKING AND ALCOHOL CUES

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Little is known about the relationship between motivation to change smoking and alcohol use behaviors and reactivity to cues associated with these behaviors. Based on Tiffany’s (1990) cognitive model, we hypothesized that increased recognition of smoking and/or drinking as problematic behaviors would be associated with increased arousal and negative affect in response to salient drug cues. Daily smokers, half of whom were also alcohol dependent, were administered smoking and alcohol versions of the Stages of Change Readiness and Treatment Eagerness Scales (SOCRATES; Miller & Tonigan, 1996). Cue reactivity evaluation consisted of picture presentations of salient alcohol and smoking cues, followed by subjective ratings of craving, valence, arousal, dominance and interest. Multiple regression techniques were used to examine relationships between subjective cue reactivity measures and SOCRATES subscales. Findings indicated that alcoholic smokers who were more cognizant of smoking as a problematic behavior reported increased pleasure in response to alcohol cues. In non-alcoholic smokers, those who recognized smoking as a problem reported greater cravings to drink alcohol in response to smoking cues (i.e., “cross-cue reactivity”), and those who perceived drinking as problematic reported decreased arousal in response to these cues. Finally, smokers who were ambivalent about drinking as a problem reported diminished control while processing alcohol cues. Although study hypotheses were not confirmed, findings were consistent with the general notion that smokers and drinkers who differ in motivational factors exhibited differential reactivity to smoking and alcohol cues.

This study was supported by NIAAA grant AA11157.

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POS3-102
CUE REACTIVITY OF CHRONIC SMOKERS WITH HISTORY OF ALCOHOL DEPENDENCE VERSUS POLYDRUG ABUSE

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INTRODUCTION: Smokers with a history of alcohol dependence develop excessive cigarette craving when exposed to either smoking-related or alcohol-related cues. Less is known about the cue reactivity of those vulnerable to polydrug abuse (cocaine plus other drugs). According to behavioral economic theory, nicotine and alcohol are established complements (increased use of one substance increases use of the other); conversely, nicotine does not ordinarily complement cocaine use. To the extent that complements to nicotine drive elevated craving among co-morbid substance dependent smokers, we expected that smokers with alcohol dependence histories would have greater cigarette cravings when compared with smokers who report a history of drug dependence. METHODS: All participants (19% female) were abstinent from all substances (except nicotine) for 6 months. Smokers with only alcohol dependence histories (n=10) and smokers with histories of polydrug dependence (n=22) were exposed to an in vivo lit cigarette versus a neutral non-drug related stimulus in counterbalanced order. RESULTS: Mixed linear modeling yielded a significant time*dependence type*condition interaction (F (37) = 2.30, p = .027). Smokers with an alcohol dependence history showed disproportionate increases in smoking urges when exposed to an in vivo cigarette versus tape. Conversely, those with polydrug abuse histories showed no greater cigarette craving in response to cigarette versus tape, and their magnitude of craving was similar to alcohol vulnerable smokers’ response to the neutral condition. Findings suggest heightened reactivity to cigarette cues for smokers with prior histories of alcohol dependence.

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POS3-103
TEMPERAMENT AND CUE REACTIVITY AMONG ALCOHOLIC AND NON-ALKOLIC SMOKERS

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Cue reactivity has garnered much attention in the addiction field. To date, studies on individual differences and cue reactivity have been scarce. Impulsive individuals are generally more likely to initiate and maintain smoking and alcohol use behavior, and recent work has suggested that they are more reactive to smoking cues. The present study explored the relationship between impulsivity, as well as other dimensions of personality, and reactivity to smoking, alcohol, and affective (pleasant, neutral, unpleasant) cues. The sample consisted of alcoholic and non-alcoholic smokers. All subjects were administered a 25-item questionnaire that taps five dimensions of temperament, i.e., activity, sociability, impulsivity, fear, and anger (Buss & Plomin, 1984). The cue reactivity evaluation consisted of a series of picture cues, followed by subjective ratings of craving and affective state. Separate correlational analyses were used for the alcoholic and non-alcoholic smokers to examine relationships between cue reactivity and temperament differences. Analyses indicated that alcoholic smokers who were relatively higher on the impulsivity subscale reported increased cravings to drink in response to both drug-related and salient affective (i.e., pleasant, unpleasant) cues. This finding extends previous data, and suggests a mechanism whereby impulsive individuals may be prone to use multiple substances by virtue of enhanced cue reactions. In addition, alcoholic smokers who were either impulsive or anger prone reported relatively lower pleasure in response to smoking cues. Finally, non-alcoholic smokers who reported higher levels of sociability demonstrated enhanced cravings to drink in response to both smoking and alcohol cues. These findings will be discussed in relation to cue reactivity as a potential mechanism underlying the relationship between personality/temperament and risk for smoking and other drug-use.

This study was supported by NIAAA grant AA11157.

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POS3-104
NICOTINE AND AFFECT: DOES CRAVING MEDIATE AFFECTIVE MODULATION IN SMOKERS?

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Smokers report smoking to regulate their mood states, but it has been suggested that affective modulation by nicotine only occurs in the presence of withdrawal-related craving. We tested whether any association between degree of nicotine dependence (FTND) and affect (PANAS) is mediated by craving (GSO) in 578 smokers (54% female, mean age 45 years 6 months) recruited into a clinical trial comparing nicotine nasal spray to transdermal nicotine. Data reported here are from self-report questionnaires collected at baseline. Standard criteria for mediation were tested using correlational analyses. Nicotine dependence was positively correlated with both negative reinforcement craving (r = +0.22, p < 0.001) and negative affect (r = +0.10, p = 0.02), and negative reinforcement craving positively correlated with negative affect (r = -0.12, p < 0.01). The partial correlation between nicotine dependence and negative affect, controlling for negative reinforcement craving, was reduced and no longer significant (r = +0.07, p = 0.08), suggesting a mediating influence of negative reinforcement craving. Nicotine dependence was also positively correlated with positive reinforcement craving (r = +0.17, p < 0.001) and negatively correlated with positive affect (r = -0.14, p = 0.01), and positive reinforcement craving negatively correlated with positive affect (r = -0.09, p = 0.04). However, the partial correlation between nicotine dependence and positive affect, controlling for positive reinforcement craving, remained significant (r = -0.12, p < 0.01). These data suggest that the association between nicotine dependence and negative affect is mediated by negative reinforcement craving, while the association between nicotine dependence and positive affect is not mediated by positive reinforcement craving. Smoking cessation interventions should focus on reducing negative affect.

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POS3-105
EFFECTS OF PATCH EXPECTANCY ON SMOKING URGE AND ANXIETY

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Although transdermal nicotine has demonstrated utility for smoking cessation, little is known about its mechanisms of action. In addition to the pharmacological effects of nicotine, expectancies about patch effects may influence responsivity. Fifty-two undergraduate smokers were randomly assigned to receive a nicotine (21 mg) or placebo patch. Following a 4-hour patch absorption period (deprivation in the case of placebo), participants engaged in a series of imaginal exposures. Self-report measures were completed following the patch absorption/deprivation period and imaginal exposures. Following the exposures, participants were asked whether they believed they received a nicotine or placebo patch. Four possible expectancy outcomes were generated: expected nicotine/received nicotine (N/N), expected nicotine/received placebo (N/P), expected placebo/received nicotine (P/N), expected placebo/received placebo (P/P). Following the absorption/deprivation period, patch expectancy groups differed on intention/desire to smoke and anticipation of pleasure from smoking, but not with regards to anticipation of relief of negative affect and urgent desire to smoke (Questionnaire of Smoking Urges; Tiffany & Drobes, 1991) or anxiety (0-100 scale). Follow-up analyses indicated that N/N participants experienced less intention/desire to smoke and anticipation of pleasure than P/P participants (p<.001). No significant differences were observed on this variable between N/P and P/N participants (p>.62), suggesting that both pharmacological and subjective expectancies about nicotine may influence responsivity. No significant between-groups differences were observed on urge or anxiety in response to imaginal smoking-cue scripts. These findings suggest that pharmacological effects of nicotine may moderate expectancy.

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This study examined the relationship between momentary electronic diary and retrospective daily measures of smoking urges, drinking urges, and mood states. Participants (N=97) were alcohol dependent smokers in a randomized clinical trial of concurrent smoking cessation and alcohol treatment. Individuals monitored moods, urges to smoke, and urges to drink using an electronic diary (ED) that signaled them for assessment at quasi-random intervals four times per day for 14 days following completion of an alcohol and tobacco treatment program. At the end of each of these 14 days, participants also completed a written diary, retrospectively rating their experience for the day. Participants responded to 73% of the random prompts by the ED, and completed approximately 86% of the end of day written reports. Mixed model analyses were conducted to determine the relationship between the two assessment methods. ED reports of smoking urge, drinking urge, and mood state were generally not predictive of the daily retrospective reports. However, smoking urge status significantly moderated the relationships between reports of both smoking and drinking urge. Predictive validity of these two assessment methods was also examined. These results indicate that, among alcohol dependent smokers in early recovery, momentary and retrospective reports of smoking urges and other subjective measures are not consistently related. This suggests that the validity of each of these self-report assessment methods should not be assumed.

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A PRELIMINARY EVALUATION OF A SELF-REPORT QUESTIONNAIRE OF SMOKING-RELATED OBSESSIONS AND COMPULSIONS

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The purpose of this study was to explore the psychometric properties of the obsessive compulsive smoking scale (OCSS). Adapted from the obsessive compulsive drinking scale (Anton, Moak, & Latham, 1996), the 14-item OCSS is designed to measure obsessive craving for cigarettes and compulsion to smoke. Participants (n=63) averaged 19.6 years old (SD=1.5). They smoked 5.4 cigarettes per day (SD=5.1) for an average of 3.7 years (SD=2.0) and had a mean Fagerstrom Tolerance Questionnaire (FTQ) score of 4.0 (SD=1.7). Using principal components analysis with varimax rotation, we identified three principal components: compulsion/behavioral disinhibition (6 items; 25% of total variance explained), obsession (2 items; 19% of variance explained), and interference/distress (6 items, 20% of variance explained). All showed good reliability of internal consistency (Chronbach's alpha=.84,.85,.80, respectively; Chronbach's alpha for all 14 items=.85). In an evaluation of its validity, higher OCSS total scores were associated with a greater number of cigarettes smoked per day over the past week (r=.58, p<.01) and greater nicotine dependence as measured by the FTQ (r=.51, p<.01). Higher OCSS total scores also were associated with greater craving for cigarettes as measured by the Brief Questionnaire of Smoking Urges (r=.32, p<.01) and self-reported difficulty with craving during past quit attempts (r=.41, p<.01). Findings provide preliminary support for the reliability and validity of the OCSS. The extent to which the OCSS measures a unique subtype of craving remains to be explored.

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LACK OF ASSOCIATION BETWEEN COMMUNITY-LEVEL YOUTH ACCESS ORDINANCES AND ADOLESCENTS' PERCEIVED ACCESS TO TOBACCO, PURCHASE ATTEMPTS, AND SMOKING BEHAVIOR

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Objectives: To test whether community-level youth access ordinances reduce adolescents' perceived access to tobacco, purchase attempts, and tobacco use. Methods: Telephone survey of 3,831 Massachusetts adolescents (64% response) linked to a database of all town-level youth access ordinances in the state. Respondents' perceived ease of access to tobacco, attempts to purchase tobacco, and tobacco use were assessed. The association of these outcomes with the characteristics of youth access ordinances in the respondents' town of residence (n=314) was tested in multi-level analyses that included town-level clustering, and controlled for multiple individual and environmental characteristics, including a measure of community-level antismoking sentiment. Results: Community-level youth access ordinances were not associated with adolescents' perceived access to tobacco, purchase attempts, or tobacco use, with two exceptions: banning free-standing displays was associated with less perceived access to tobacco (OR=0.695% CI, 0.4-0.9; p=.01), and a vending machine ban was associated with less current (30-day) smoking (OR=0.695% CI, 0.4-0.9; p=.02). Conclusions: This study found no consistent associations between community-level youth access ordinances and adolescents' perceived access to tobacco, purchase attempts, or smoking prevalence. Given the limited resources available for tobacco control and the expense of developing and implementing youth access policies and programs, tobacco control policymakers should devote funds toward interventions with better documented effectiveness.

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ADOLESCENT VS. ADULT ONSET NICOTINE SELF-ADMINISTRATION IN FEMALES RATS

Edward D. Levin, Ph.D., Amir H. Rezvani, Ph.D.; Daniel Montoya, Ph.D., Jed E. Rose, Ph.D., and H. Scott Swartzwelder, Ph.D., Duke University

The great majority of tobacco addiction begins during adolescence. However, little is known about differential nicotine effects in adolescents vs. adults. It is not possible to determine in humans whether early initiation causes heavy dependence or the same factors contribute to both heavy dependence and early initiation. We used a rat model to determine how age of onset impacts nicotine self-administration. In Experiment 1, nicotine IV self-administration of female Sprague-Dawley rats (0.01-0.08 mg/kg/infusion) was determined in adolescents (beginning at 54-62 days) vs. adults (beginning 84-90 days). In Experiment 2, chronic nicotine self-administration over four weeks from adolescence into adulthood was compared with self-administration beginning in adulthood. In Experiment 3, adolescent-adult differences in nicotine effects on body temperature and locomotor responses were studied. Adolescent-onset rats showed a significant main effect of increased nicotine intake compared with adult-onset rats. Significant age of onset differences were also seen in chronic nicotine self-administration over four weeks. The adolescent-onset group had nearly double the rate of nicotine self-administration as the adult-onset group. This increased nicotine intake persisted into adulthood. In experiment 3, adolescent rats had greater response than adults to the hypothermic effects of nicotine, but had less response than adults to the reduction in locomotor activity seen after nicotine. Adolescent-onset nicotine self-administration in female rats was associated with significantly higher levels of nicotine self-administration vs. rats that began nicotine self-administration in adulthood. This greater self-administration persists into adulthood and may underlie greater propensity of adolescents to nicotine addiction.

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ALCOHOL DEPENDENT SMOKERS FOR ASSESSING URGES AND MOOD IN A Unique subtype of craving remains to be explored.
RP-001

AGE DIFFERENCES IN NICOTINE ACTIVATION OF THE HYPOTHALAMIC-PITUITARY-ADRENAL (HPA) AXIS

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Adolescence is a critical period for the initiation of tobacco use, with more than 90% of smokers beginning at this age. We have recently shown that nicotine synergizes with another tobacco component, acetaldehyde, to increase reward in adolescents, but not in adults. To clarify the underlying mechanism, experiments were designed to evaluate central neuronal activation and peripheral hormone release following administration of nicotine or acetaldehyde, alone or in combination, in adolescents and adults. Male rats aged postnatal day 27 or adults (n=3-5 per group) were given two 6-sec intravenous injections over a one-minute period containing either saline, nicotine (30 microgram per kilogram per injection), acetaldehyde (16 microgram per kilogram per injection) or nicotine plus acetaldehyde. After thirty minutes, animals were decapitated and trunk blood and brains were collected. Plasma corticosterone levels were measured by radioimmunoassay and neuronal activation was evaluated by c-fos mRNA expression. Nicotine induced HPA axis activation in the adult, significantly increasing c-fos mRNA levels in the hypothalamic paraventricular nucleus and plasma corticosterone release. In contrast, there was no activation of the HPA axis in the juvenile rats. Combined injection of acetaldehyde and nicotine did not have an effect significantly different from that of nicotine alone at either age. These data suggest that adolescent rats may be considerably less sensitive than adults to the stressor effects of tobacco constituents. However, the mechanism underlying the synergistic interaction between the rewarding effects of nicotine and acetaldehyde is still unknown.

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RP-002

NEUROENDOCRINE RESPONSE TO DOPAMINERGIC AGENTS IN ADOLESCENTS WITH NICOTINE DEPENDENCE

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Mesolimbic dopaminergic system is involved in the pathophysiology of nicotine dependence. However, there is a lack of research examining the dopaminergic activity in adolescents with nicotine dependence. In a previous poster presentation, we presented preliminary evidence suggesting a blunted dopaminergic response to methylphenidate challenge in adolescents with nicotine dependence. In this abstract we present further evidence from the recently completed study examining neuroendocrine response to a dopaminergic challenge in three groups of adolescents—nicotine dependent, with ADHD, and age, race, and gender matched controls.

METHODS: Thirty-five adolescent participants (15–20 yr.) were recruited for the study. Neuroendocrine and behavioral response to the dopaminergic agents—methylphenidate (10 mg) and pramipexole (0.25 mg) were examined. Measures of these responses were spontaneous eye-blink rate, plasma prolactin (PRL), and growth hormone (GH). Additionally, participants completed a visual analog mood scale (VAMS).

RESULTS: Adolescents with nicotine dependence had a blunted GH response to methylphenidate as compared to controls (p<0.05). Adolescents with nicotine dependence also had significantly greater erotic response after methylphenidate, and significantly greater energy after both methylphenidate and pramipexole (p<0.05).

CONCLUSION: Adolescents with nicotine dependence may have a blunted dopaminergic neuroendocrine activity. Potential implications in nicotine dependence, and for future studies are discussed.

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RP-003

ON THE RELATIVE RATES OF EVAPORATION OF NICOTINE AND AMMONIA FROM CIGARETTE SMOKE. COMPUTATIONAL SIMULATIONS AND CIGARETTE SMOKE STUDIES USING DENUDER TUBES

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Computational modeling and denuder tube experiments with mainstream (MS) cigarette smoke indicate that ammonia in MS smoke does not increase the total rate and amount of nicotine evaporation from MS smoke particles. Computational simulation of the kinetic mechanism describing volatile loss of nicotine, ammonia, and acetic acid from an aqueous solution showed that variation over a wide range of initial ammonia concentrations had no significant effect upon the rate of loss of nicotine. Simulations were conducted with a model incorporating a continuous steady addition of ammonia to the system; under these conditions, ammonia significantly increased the rate of nicotine volatile loss. A series of smoking experiments were performed where the MS smoke from blended cigarettes was passed through a denuder tube. Nicotine, ammonia and solanesol deposited on the walls of the denuder tube were quantified (solanesol, a non-volatile, high molecular weight tobacco alkaioid, was used as a marker for particle deposition). The amount of ammonia deposited on the denuder tube was an order of magnitude greater than that of nicotine. Thus, ammonia evaporates from the MS smoke particles much faster than does nicotine.

Portions of this work were performed by employees of Philip Morris USA Inc. and Philip Morris International. The work at Emory University and by SaddlePoint Frontiers was funded by Philip Morris USA Inc.

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RP-004  NOVEL SITE OF ACTION FOR NICOTINE: INHIBITION OF CHOLINERGIC PEDUNCULOPONTINE (PPN) OUTPUT
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Previous studies have established that the P13 midlatency auditory evoked potential (MAEP) is generated, at least in part, by cholinergic PPN neurons, is sleep-state dependent and rapidly habituates, characteristics it shares with the human P50 MAEP. That is, the P13 MAEP may be a measure of reticular activating system (RAS) output to the thalamus. Thus, the amplitude of the P13 MAEP can be considered a measure of arousal and the rodent equivalent of the human P50 MAEP. The vertex-recorded P13 MAEP was studied in adult male (n=8) Sprague-Dawley rats as described in Miyazato et al., (1995, 96, 97, 99). Following control recordings, saline or nicotine (NIC) at 0.3, 0.6, 1.0 or 2.5 mg/kg s.c. was administered. NIC suppressed the amplitude of the P13 MAEP in a dose-dependent manner, while saline had no effect. Significant (P<0.01) decreases in amplitude were observed a 5 and 10 mins after 0.6 and 10.9 mg/kg NIC. The duration of the amplitude suppression was longer after 2.5 mg/kg. Cholinergic inputs to PPN neurons are known to be inhibitory. These results suggest that nicotinic receptors, known to be present in the PPN, may be activated by NIC to decrease the level of arousal. This could account for the calming effect of smoking. It could also account for the excessive use of NIC in schizophrenia (which has been proposed to involve increased PPN output) as a form of self-medication. The effects of prenatal exposure to NIC and to environmental tobacco smoke (ETS) on blunted arousal responses in SIDS can also be accounted for using this novel site of action.

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RP-005  DIFFERENTIAL RESPONSES TO NICOTINE IN LEWIS AND FISCHER-344 RATS USING DRUG DISCRIMINATION AND CONDITIONED PLACE PREFERENCE
John R. James, Ph.D.*, Scott D. Philbin, M.S., Robert E. Vann, M.S., Stephen A. Varvel, M.S., Susan E. Robinson, Ph.D., Virginia Commonwealth University; Herbert E. Covington 3rd, M.S., Tufts University

Individual and strain variability of experimental animals administered nicotine suggests a genetic component in the functioning of nicotinic acetylcholinergic receptors (nAChRs). Nicotine appears to act as a neuronal modulator that can affect behavior contingent on the individual genetic makeup of the individual. This distinction, if evident in humans, may be relevant to one's susceptibility for nicotine addiction and one’s ability to abstain from using tobacco products. The present study confirmed that two inbred strains of male rats, Lewis (LEW) and Fischer-344 (F-344), exhibited differential responses to the discriminative stimulus (DS) effects and rewarding properties of nicotine. ED-50 values showed that the LEW rat was more sensitive and F-344 rats required a higher training dose (0.9 mg/kg vs. 0.4 mg/kg) of nicotine in order to acquire the DS. Conditioned Place Preference (CPP) experiments suggested that nicotine (0.6 mg/kg, SC) was perceived as rewarding in the LEW rat whereas the F-344 rat perceived nicotine as neutral or aversive. CPP experiments using a higher dose of nicotine (0.9 mg/kg) attenuated the previous nicotine-induced place preference in the LEW rat whereas a small population of F-344 rats spent more time in the nicotine-conditioned chamber. The hypothesis offered to explain these differences is that F-344 rats insensitivity to nicotine is contingent on select brain area nAChRs rapidly desensitizing when administered nicotine (i.e. exhibit acute tolerance) when compared to the LEW strain.

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RP-006  SENSITIVITY TO NICOTINE ACUTE PHARMACOLOGICAL RESPONSES IN MALE AND FEMALE ADOLESCENT MICE
Billy R. Martin*, and M. Imad Damaj, Department of Pharmacology, Virginia Commonwealth University, Richmond VA 23298

Recent evidence suggest that adolescence and adult vulnerability to nicotine may be significantly different. The purpose of this study was to: (1) compare nicotine's pharmacological effects after acute s.c. injection in adolescent and adult mice and (2) determine whether there are sex differences after nicotine administration. Male and female ICR mice of different ages (25, 42, 55 and 70 days of age) received s.c. injections of nicotine at different doses. The antinociceptive (tail-flick and hot-plate tests), hypomotile and hypothermic effects were then measured at different times after nicotine and EDS0 values were determined. Young Adolescent female mice exhibited higher sensitivity to nicotine-induced analgesia and hypothermia compared to the adult female mice (ED50 of 0.40 and 0.9 mg/kg for adolescent and adult, respectively in the hot-plate test). In contrast, adolescent male were less sensitive than adult males to nicotine-induced analgesia and hypothermia (ED50 of 1.8 and 1.0 mg/kg for adolescent and adult, respectively in the tail-flick test). In addition, this difference in sensitivity to nicotine’s effects in adolescent mice decreased with age. Finally, the sex differences observed in adults mice to nicotine-induced antinociception was only significant in young (25 days) but late (55 days) adolescent mice. These results indicate that nicotine’s pharmacological effects differ depending on age and sex and that these factors may be involved in the vulnerability to nicotine associated with particular developmental stages.

Supported by a grant from The Virginia Youth Tobacco Project.

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RP-007  EFFECTS OF HIGH-FAT DIET ON NICOTINE REWARD
Carrie L. Watters, Nick DeLong and Julie A. Blendy*

Endogenous opioids have been shown to modulate the hedonic properties of food which may contribute to the development of obesity in animals or humans exposed to a highly palatable diet. Endogenous opioids may also contribute to the rewarding properties of nicotine. Therefore, to increase our understanding of the mechanisms that underlie nicotine dependence and co-morbid obesity, we investigated the effects of a high fat diet on the rewarding properties of nicotine in a mouse model using conditioned place preference. In these studies mice were placed on a diet of normal chow (NC) or high fat chow (HFC) (where 45% of the total calories were from fat) for 15 weeks. Body weights and %body fat were significantly greater in the HFC group compared to the NC group. Both groups were conditioned to a place preference paradigm with injections of either saline or nicotine (1.0mg/kg) every other day for 8 days and tested for place preference in the absence of drug on day 9. Our results demonstrate that nicotine is not rewarding in mice maintained on a high fat diet. To investigate the role of the endogenous opioid system in this response, we examined levels of mu-opiate receptor (MOR) mRNA in the ventral tegmental area in these mice. Levels of MOR mRNA are significantly down-regulated in the HFC group compared to NC. In addition, levels of leptin were significantly up-regulated in animals maintained on the high fat diet. Therefore, to determine if leptin itself is responsible for the down-regulation of MOR mRNA in HFC mice, we injected mice with leptin (1 mg/kg i.p.) for 8 days. In contrast to animals maintained on a high fat diet, mice injected with leptin show similar levels of MOR mRNA as saline controls. Together these data suggest that regulation of MORs by leptin may contribute to a reduced nicotine reward response in mice.

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**RP-008**

**GENE EXPRESSION CORRELATES OF THE REWARD DEFICITS ASSOCIATED WITH NICOTINE AND AMPHETAMINE WITHDRAWAL**

Jessica Chevrette, B.S.*, Karen Wager-Smith, Ph.D., Steve Kay, Ph.D., Athina Markou, Ph.D., The Scripps Research Institute, La Jolla, CA; and John Walker, Ph.D., Genomics Institute of the Novartis Research Foundation, La Jolla, CA

Rats withdrawn from 4–7 days of exposure to nicotine or amphetamine exhibit diminished interest in rewarding stimuli for several days, as measured by elevations of the threshold for electrical self-stimulation of rewarding areas of the lateral hypothalamus. These reward threshold elevations are reversed by co-administration of an antidepressant cocktail consisting of fluoxetine (Prozac) plus a serotonin-1A receptor antagonist (p-MPPI). We performed a microarray analysis to address the molecular basis of this phenomenon. Two independent groups of 4-5 animals were each analyzed on Affymetrix U34A genechips. In the shell of the nucleus accumbens, we found that 32 (amphetamine) and 17 (nicotine) out of 3000 expressed genes changed their expression by 1.8 fold or greater and had p values of less than 0.05 using the Resolver software program. While only two gene changes were shared by both nicotine and amphetamine withdrawal using these criteria, each experiment had a predominance of injury/inflammatory related genes such as molecules involved in scarring (collagens), inflammatory mediators (prostaglandin D synthase), and acute-phase injury reactants. Furthermore, 80 to 100% of the genes that changed in these paradigms shared the following pattern: Expression was affected by withdrawal, returned towards saline levels upon antidepressant-induced remission, and yet was unaffected when antidepressants were given to non-drug-withdrawing naïve animals. Our results indicate that injury-related processes in the nucleus accumbens are correlated with reward deficits. Further, the data suggest that antidepressants may have an unexpected antineuroinflammatory activity on injured tissue, with relatively little effect on the intact nucleus accumbens shell.

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**RP-009**

**GENETIC AND INDIVIDUAL INFLUENCES UPON THE CENTRAL EFFECTS OF NICOTINE**

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Recently, using conditioned place preference, our laboratory confirmed the widely accepted principle that Lewis (LEW) rats are more sensitive to nicotine than Fischer (F-344) rats; though incongruent, we also observed increased preference for nicotine in F-344 rats with a higher nicotine dose (unpublished data). One possible explanation for the differing nicotine sensitivities is that the nAChRs of F-344 rats desensitize more rapidly than those of the LEW rats when administered nicotine; however, the differences in biochemical indices of nicotinic receptor function between these two strains remain elusive. Therefore, these studies used Rb+86-efflux assays to examine the functional sensitivity of nicotinic receptors in synaptosomes prepared from the frontal cortex, hippocampus, striatum and thalamus of nicotine treated and control F-344 and LEW rats. Involvement of nicotinic receptor function is further demonstrated using nicotinic receptor ion channel efflux in the F-344 rat using in vivo and in vitro administrations of mecamylamine. Results indicated that nAChRs ion channel efflux was increased during nicotine stimulation for each strain and in each brain region yet the magnitude of ion efflux varied between regions and strains. Results from the mecamylamine tests confirmed nicotinic receptor mechanisms while demonstrating that in vivo and in vitro administrations of mecamylamine block central nicotinic receptor function. Overall, these findings demonstrate the utility of Rb+86-efflux assays for examining the central effects of nicotine while further emphasizing the importance of how individual and genetic factors affect an organism's sensitivity to nicotine.

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**RP-010**

**THE MU OPIOID RECEPTOR GENE (OPRM1) ASN40ASP SINGLE NUCLEOTIDE POLYMORPHISM INFLUENCES THE ACUTE EFFECTS OF SMOKING**

Kent Hutchison* and Vyga Kaufmann

A recent trend in cue reactivity research is the identification and testing of genetic factors that may influence craving and other cue-elicited responses. Genes that either influence acute responses to nicotine itself or influence the neuronal adaptations that result from repeated nicotine administration may also influence reactivity to smoking cues. The primary objective of our current work is to examine genetic factors that influence acute responses to nicotine and reactivity to nicotine cues. To that end, regular smokers came to the laboratory after 8 hours of abstinence and completed a standard assessment of reactivity to smoking cues. After the smoking cue exposure, participants smoked three high nicotine cigarettes. Baseline measures of tobacco consumption and smoking history and a DNA sample were collected prior to the experimental session. Given the likely role mu opioid receptors in the acute effects of nicotine, a functional polymorphism within this gene (e.g., a functional A/G SNP in exon 1 of the OPRM1) was assayed. Analyses indicated that the OPRM1 SNP influenced the effects of acute nicotine on mood, such that smokers with the less frequent G allele experience greater enhancement of positive mood, greater reductions in negative mood, and greater cognitive effects after smoking. However, the OPRM1 SNP did not moderate reactivity to smoking cues. While the data suggest that this SNP is associated with the acute effects of nicotine but not reactivity to cues, it is also possible that these analyses lacked statistical power to detect effects on cue reactivity. Additional analyses will be presented to test this possibility.

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**RP-011**

**ASSOCIATION BETWEEN THE COMT MARKER AND NICOTINE DEPENDENCE**

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To explore genetic influences upon nicotine dependence, 342 treatment-seeking smokers were genotyped for the functional catechol-O-methyl-transferase (COMT) polymorphism (91 HH, 160 HL, 91 LL). After controlling for baseline body mass index, depression, and age, an association was identified (p-value = .0072) between the presence of the H’ (high activity) allele and pre-treatment nicotine dependence level as measured by the Fagerstrom Test for Nicotine Dependence (FTND). To validate this finding, 443 treatment-seeking smokers from an independent smoking cessation clinical trial were genotyped for the COMT polymorphism (145 HH, 173 HL, 125 LL). After controlling for baseline body mass index, depression, and age, no association between the presence of the H’ allele and nicotine dependence was detected (p-value = .6418) within this study. To understand this pattern of results, we considered several possible explanations, including confounding due to population stratification, influential observations, and low statistical power to replicate the initial finding. To assess for population stratification, 43 random bi-allelic single nucleotide polymorphism (SNP) markers were analyzed on all 785 participants. The results did not provide evidence of population substructure. Failure to replicate the initial association is likely the result of a common issue within association studies, low statistical power to replicate a small genetic effect.

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RP-012 CYP2A6 GENETICALLY SLOW NICOTINE INACTIVATORS SMOKE FEWER CIGARETTES PER DAY AND HAVE A LOWER RISK FOR SMOKING

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CYP2A6 is the primary enzyme that inactivates nicotine to cotinine. The CYP2A6 gene contains numerous variations; some are associated with decreased or absent activity. Since smokers titrate their tobacco consumption for optimal nicotine levels, we hypothesized that individuals with genetically slow nicotine metabolism (slow inactivators) would have a lower risk for regular smoking and smoke fewer cigarettes per day. Adult Caucasian non-smokers (N=224) (1-99 cigarettes/lifetime) and regular smokers (N=375) (>100 cigarettes/lifetime) completed questionnaires assessing demographics, tobacco and drug use history and were genotyped for CYP2A6 alleles associated with decreased nicotine metabolism (CYP2A6*2, CYP2A6*4, CYP2A6*9, CYP2A6*12). The proportion of individuals with slow inactivator genotypes was significantly different between the non- and regular smokers (12.5% and 6.9%, respectively, p=0.027, OR=0.52 [95% CI: 0.30-0.91]). A similar finding was observed when regular smoking was defined by DSMIV criteria for nicotine dependence (N=301). Among regular smokers, mean daily cigarette consumption was significantly (p=0.003) lower for individuals with slow inactivator genotypes (21.3 cigarettes/day [95% CI: 17.8-24.7]) compared to the normal inactivators (27.2 cigarettes/day [95% CI: 25.6-28.8]). This study replicates and extends earlier findings indicating that slow nicotine inactivators are less likely to be adult smokers (independent of dependence) and if they are, they smoke significantly fewer cigarettes per day.

This study was supported by CIHR MOP-53248. KAS receives funding from a CIHR doctoral fellowship and a STTPRT top-up award and RFT holds a Canadian Research Chair in Pharmacogenetics.

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RP-013 ANTICIPATING CLINICAL INTEGRATION OF GENETICALLY-TAILORED TOBACCO DEPENDENCE TREATMENT: PERSPECTIVES OF PRIMARY CARE PHYSICIANS

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BACKGROUND: Emerging research may make it possible to individually tailor pharmacological treatment for individuals with tobacco dependence by genotype. This study explores primary care physicians’ attitudes about the strengths and barriers to using genetic testing to match patients to optimal nicotine replacement therapy. Methods: Four focus groups with physicians (n= 27) were conducted using a structured interview guide. Data were analyzed using thematic content analysis. Physicians were asked to respond to scenarios describing likely test characteristics based on existing literature.

RESULTS: Respondents were 59% male, 67% white, with a mean age of 36 years. Physicians believed genetically tailored treatment might offer new hope to smokers trying to quit, yet also noted several potential barriers to clinical integration. Patient-centered barriers included erroneous assumptions by patients regarding the meaning of genetic test results, possible misinterpretation of information regarding racial differences in the prevalence of certain risk alleles, and the potential for discrimination in health insurance and employment against patients undergoing testing. Concerns regarding potential stigmatization increased dramatically when physicians were told that the same genotypes that would be identified to tailor smoking treatment have also been associated with increased risk of becoming addicted to nicotine, as well as other addictions (e.g., cocaine, alcohol) and psychiatric disorders. Practice-based concerns included physicians’ competence and resources in counseling patients and interpreting genetic test results. CONCLUSION: Although physicians identified many benefits to tailoring smoking treatment by genotype, they raised many concerns. Primary care physicians need additional educational inputs and system support prior to integrating genetic testing into their routine practice.

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RP-014 NICOTINIC ANTAGONIST AUGMENTATION OF SSRI ANTIDEPRESSANTS

Jennifer C. Vesciochio*, Kristi A. Sacco, Melissa M. Dudas, Angelo Termine, Gerard Sanacora, Tony P. George

BACKGROUND: There is increasing evidence that many antidepressant agents (tricyclics, bupropion, SSRIs) exert their clinical effects, at least in part, by antagomism of central high-affinity nicotinic receptors. This is of clinical interest since nearly 50% of patients with major depression are cigarette smokers, and smoking may have antidepressant effects. The present study is a “proof-of-concept” clinical trial that evaluates the potential of the high-affinity nicotinic acetylcholine receptor (nAChR) antagonist, mecamylamine hydrochloride (MEC; Inversine®), as an augmentation strategy for treatment of major depression in patients who are partial responders to serotonergic-selective reuptake inhibitors (SSRIs).

METHODS: Subjects (n=80) with major depression who partially responsive (based on HAM-D scores) to SSRIs (e.g., fluoxetine, sertraline, citalopram, paroxetine and fluvoxamine) are being randomized to: 1) MEC (5 mg po bid) or; 2) matching placebo (0.0 mg/day) for a total of eight weeks.

RESULTS: To date, we have randomized n=8 subjects (n=5 to MEC, n=3 to placebo), and n=7 subjects have completed the entire 8-week trial. Three out of five subjects assigned to active MEC were classified as responders at the end of the 8-week trial, as assessed by a 50% reduction in HAM-D scores as compared to 0/3 subjects assigned to placebo (Chi square = 2.88, df=1, p=0.09). Constipation was reported as the major adverse event (AE) in the MEC group (3/5 subjects), compared to placebo (1/3 subjects).

CONCLUSIONS: These preliminary results suggest that high-affinity nAChR antagonism may augment SSR1-treated refractory major depression.

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RP-015 FACTORS PREDICTING PATIENT SATISFACTION WITH MEDICATION

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The aim of this study was to examine correlates of patients’ satisfaction with their tobacco cessation medication regimen in the context of an intensive, outpatient tobacco program. Consecutive treatment completers (n = 169) were surveyed immediately prior to their first follow-up visit. All patients had received individualized treatment consisting of any one or more medications, and group or individual therapy. All treatment was free of charge. For the current sample, 57% were abstinent, 25% were smoking 10 cigarettes per day or less, and the remainder were smoking at a higher rate at follow-up. Patient satisfaction was measured with an 8-item questionnaire assessing patients’ perceptions of medication effectiveness, convenience, and side effects. The primary stepwise regression indicated that patient report of the importance of medication, level of nicotine dependence, number of therapy sessions attended, and patient report of the importance of therapy remained in the model (p<.0001), accounting for 37% of the variance in patient satisfaction (age, baseline smoking rate, years smoking, and days taking medication were excluded from the model). All variables were positively correlated with satisfaction except for nicotine dependence. There was no difference in satisfaction between patients who reported mono vs. combination pharmacotherapy. The assessment of patient satisfaction with medication is not often considered in the evaluation of treatment efficacy, but may have important implications for outcome, treatment compliance, and perhaps the willingness of relapers to seek additional help.

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RP-016  
**BUPROPION TREATMENT DOES NOT REDUCE HARM FOR THOSE WHO CONTINUE SMOKING**

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We analyzed daily time-line follow-back counts of cigarette numbers recorded during the 8-week treatment period in a placebo-controlled randomized clinical trial of bupropion. Our data reveal too many counts of zero to be modeled as poisson, because our subjects are attempting to maintain periods of abstinence. Instead, we used the zero-inflated poisson (ZIP) model, which uses a mixture of two poisson components to predict counts, but assumes that one of the components has a rate parameter lambda=0. At the same time, it uses logistic regression to model the allocation to the components of the mixture. Hence, the logistic regression part of ZIP describes abstinence, and the (lambda positive) poisson regression component describes harm-reduction. BuPROPion treatment (versus placebo) increased the odds that an observation contributed to the lambda=0 component (OR 2.37 (1.90-2.96), P<0.0005), but drug treatment did not reduce the daily cigarette counts in the lambda positive group (Rate Ratio RR=1.02 (0.90-1.17), P=0.74). The effects of sex, race, and baseline depression were also asymmetric between the logistic and poisson parts of the model. However, the effect of baseline dependence score (FTND) showed similar effects in both components, decreasing contribution to excess zeros, and increasing smoking rates in the non-zero group. Our results indicated that while bupropion treatment increased abstinence, it did not reduce smoking rates among those who continued or resumed smoking.

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RP-018  
**TREATING TOBACCO ADDICTION WITH TOBACCO: WHAT DO SMOKERS THINK?**

Joni Jensen*, David Babb and Dorothy HatsuKami

Switching from cigarettes to smokeless tobacco (SLT) products has been considered as a method to reduce exposure to tobacco toxins. Despite the controversy on the effects of SLT products, there is evidence that SLT has been shown to be less harmful than cigarettes. However, the perception of SLT among smokers is unclear. The purpose of this study was to determine the perceptions of SLT among smokers. We administered a survey to a sample of smokers, and the results indicated that smokers generally believed that SLT was less harmful than cigarettes. The survey also revealed that smokers were more likely to use SLT if they were informed of the relative health risks of smokeless tobacco products.

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RP-019  
**TEMPORAL PATTERNS OF NICOTINE GUM USE IN A CLINICAL TRIAL OF INTERVENTIONS TO INCREASE NICOTINE GUM USE**

Marc Mooney*, David Babb, Sue Jensen, Joni Jensen, Dorothy HatsuKami

An extensive literature exists describing the temporal patterns of tobacco use in both laboratory and naturalistic settings. However, relatively little is known about the temporal patterns of nicotine replacement therapy. The purpose of the current presentation is to explore temporal patterns of nicotine gum use in a clinical trial. A total of 71 smokers (56.3% Female, Previous Nicotine Gum Use = 19.7%; Means: Age = 34.8, Cigarettes/Day = 20.1, FTND = 4.6) initiated nicotine gum treatment. Participants were randomized to one of three interventions to increase the use of nicotine gum: (a) Usual Care (UC); (b) Brief Feedback (BF) on attitudes and knowledge about NRT; or (c) Contingency Management (CM). During the 15-day cessation phase, subjects were asked to self-record gum use and compliance, and placed each chewed piece of gum in a specially labeled bottle. A previous report showed that CM patients chewed significantly more gum than UC or BF patients. In order to examine temporal patterns of use, the intervals between gum completion times were calculated, i.e., inter-gum interval (IGI). Significant effects of Group, F(2,60) = 5.43, p = .008 and Time, F(14,7104) = 3.30, p<.001 were seen. The IGI in the CM group was significantly shorter than in the UC group. IGI interval tended to increase over the treatment period. In addition, event-time series analyses were conducted to identify temporal regularities in gum self-administration, yielding autocorrelograms and model identification. The implications for treatment are discussed and future research directions suggested.

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RP-020  
**DO REDUCTIONS IN WITHDRAWAL SYMPTOMS AND CRAVING MEDIATE TREATMENT OUTCOME IN NICOTINE REPLACEMENT THERAPY?**

Stuart Ferguson*, Saul Shiffman, Qianyu Dang, Chad Gualtieri, Mark Balabanis, Liz Pelayo, and William Shadel, University of Pittsburgh

Nicotine replacement therapy (NRT) has been repeatedly shown to improve smoking treatment outcome. The major mechanism posited for this improvement in outcome is that NRT reduces nicotine craving and withdrawal. This mediation has not always been confirmed in prior studies, perhaps due to limitations in the measurement of withdrawal symptoms. We tested this hypothesized mechanism of action using real-time data on craving and withdrawal, collected by randomly-scheduled EMA assessments administered on a palm-top computer. 324 smokers were randomized to receive either active high-dose 24-hours patches (35 mg) or placebo. As expected, survival analysis showed that NRT significantly increased time to first lapse (p<0.001). To estimate the effect of NRT on craving and withdrawal, we compared symptom severity in the first 5 hours after quitting (on patch or placebo) with withdrawal reported during a 5-hour period of un-medicated abstinence experimentally imposed during baseline. The analysis demonstrated that treatment with NRT reduced — and in some cases, even eliminated — craving and withdrawal. However, this reduction in withdrawal did not fully account for NRT’s impact on time to first lapse: the results from a mediation analysis showed that the hazard ratio for NRT when controlling for withdrawal (Hazard Ratio=1.7; p<0.005) was only slightly lower than the uncontrolled effect of NRT (Hazard Ratio=1.9). This suggests other mechanisms for the effectiveness of NRT need to be examined.

This research was supported by Grant DA 00684 from the National Institute on Drug Abuse to Saul Shiffman. The nicotine patches were supplied by GlaxoSmithKline Consumer Healthcare. Dr. Shiffman and Stuart Ferguson consult exclusively for GlaxoSmithKline on matters relating to existing smoking cessation products. Dr. Shiffman also has an interest in JSR, LLC, which is developing a new smoking cessation product, and is also a founder of inivodata, inc., which provides electronic devices for clinical trials.

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THE SUBJECTIVE EFFECTS OF A FIRST LAPSE ARE RELATED TO A SECOND SMOKING LAPSE

Elizabeth A. Pelayo*, B.A., Saul Shiffman, Ph.D., Chad Gwalney, Ph.D., Mark Balabanis, Ph.D., and Jean Paty, Ph.D., University of Pittsburgh

The subjective effects of initial drug use after a period of abstinence are thought to be important in determining whether an individual will continue to administer that drug. Such ratings are thought to serve as a proxy for the level of reinforcement experienced during drug use and as such provide information about the further use of that drug. In order to assess the relationship between subjective effects when abstinent smokers first lapse to smoking, in relation to how quickly they progress to a second lapse to smoking, we analyzed smokers’ responses to an initial smoking experience. 203 participants, randomized to either patch treatment or placebo, reported a lapse after a period of initial abstinence and provided satisfaction and sensory ratings of that first lapse within minutes after the episode. Six subjective effects ratings (0-10 scales) were rated: satisfaction, feeling better, pleasantness, feeling sick, throat burn, and feeling dizzy/nausea. A factor analysis yielded two independent factors, reflecting positive (satisfaction, feeling better, pleasantness) and negative (feeling sick, throat burn, feeling dizzy/nausea) reactions. On average, reactions to the lapse were mixed. Cox survival analyses were conducted to test the effect of each factor, stratified by patch treatment group, on time to second lapse. Ratings of positive responses significantly predicted modestly faster progression to a subsequent lapse (p<.005, HR=1.007) while negative reactions tended to predict slower progression (p<.10, HR=0.994). When entered together, only the positive reactions were significantly related to time to second lapse (p<.01, HR=1.007). These results suggest that the subjective experience of a lapse helps determine whether an individual continues to a second lapse, and that positive subjective effects are most important. These results also suggest the need for further study of the subjective effects of smoking and their relationship to the relapse process.

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PARTICIPANT PERCEPTIONS OF EASE OF OBTAINING CESSATION TREATMENT HELP DURING A QUIT ATTEMPT

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AIM: The purpose of this study is to investigate how interactive health communication systems (IHCs) may facilitate access to recommended elements of effective smoking cessation treatments.

DESIGN: As part of a clinical trial designed to evaluate the efficacy of the Comprehensive Health Enhancement Support System (CHESS) Quitting Smoking for Life website, participants were assigned to receive brief treatment (BT) or BT plus access to CHESS for up to 90 days (BT+CHESS). BT consisted of bupropion SR pharmacotherapy for 9 weeks, three counseling sessions and a quit guide booklet. A short survey to evaluate ease of obtaining general elements of cessation treatment was administered to 12 weeks post-quit to 96 participants.

RESULTS: CHESS users were divided into low and high use groups. Participants who used CHESS more often found it easier to “get good information on quitting and smoking” (87% reported ratings of very or extremely easy) compared to participants with less CHESS use (71%) and those in the BT treatment arm (61%), linear-trend chi-square(1)=5.8, p<0.02. With regards to “getting help with withdrawal or negative emotions,” high CHESS use participants reported greater ease (61%) than low use (24%) and BT participants (34%), linear-trend chi-square(1)=4.8, p<0.03.

CONCLUSION: Perceptions of ease of obtaining information and help during a quit attempt improved with increased use of CHESS. Use of CHESS did not increase participants’ ratings of ease of obtaining help from others. Unstructured responses from BT+CHESS participants suggested lack of daily free time limited CHESS use.

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SMOKING CESSATION IN HOMELESS POPULATIONS: INSIGHTS FROM FOCUS GROUPS

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Although the prevalence of cigarette smoking among homeless persons is higher than in the general population, little is known about smoking cessation in this population because they are typically excluded from smoking cessation research. The purpose of this study was to further understand smoking in homeless individuals and identify preferred cessation methods. We conducted six 90-minute focus groups (n=62, 7-13 per group, median duration of homelessness=5 months) at six homeless service facilities. Participants had a mean age of 41 years, were predominantly male (69.4%), African-American (59%), and smoked a mean of 18.3 cpd. Fifty percent were interested in quitting smoking in the next month, 75% in the next six months. Many began smoking while incarcerated, in the military, or staying in shelters or addiction treatment centers. Participants stated they often smoke to alleviate boredom and stress and frequently do so in combination with alcohol and/or illicit drugs. Some reported smoking more cigarettes since becoming homeless. Others reported smoking fewer or less expensive cigarettes, hand-rolling cigarettes, borrowing/sharing cigarettes, or smoking discarded cigarettes due to financial constraints. Participants cited the pervasiveness of smoking in homeless settings as a potential barrier to quitting. A majority would consider using approved pharmacotherapies for smoking cessation. The nicotine inhaler was the most preferred, followed by bupropion, the nicotine patch, lozenge, gum and spray. Of these, bupropion was believed to have the most “street value.” This study illustrates the unique needs of homeless smokers and how these needs should inform the design of smoking cessation interventions for this underserved population.

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SMOKING CESSATION: ARE SOME STRATEGIES BETTER THAN OTHERS?

Kathleen A. O’Connell*, Vanessa L. Hosein, Teachers College Columbia University; Joseph E. Schwartz, State University of New York–Stony Brook; and Ruth Q. Leibowitz, South Texas Veterans Administration Healthcare System

Coping is an important tool for successful smoking cessation. In prior work we found that the number of coping strategies used during a highly tempting episode was positively related to abstinence from smoking. This paper examines whether particular coping strategies are better or worse than others in preventing lapses and decreasing urge levels. During the first 14 days of cessation, 61 participants recorded their coping strategies on audiotape and then answered questions on palmtop computers about pre- and post-coping urge levels and lapses. Coping strategies were coded into 17 distinct categories. After screening variables to identify candidate strategies, we used mixed level random effects backward elimination regression analyses to compare candidate strategies with the average effect of all strategies. With the level of urge prior to coping controlled, the only strategy that was better than average in preventing lapses was a cognitive strategy involving intent to engage in coping without specifying whether this coping was actually carried out (OR = .405, p<.02). This same strategy type was related to increased urge level after coping relative to the average strategy (B = .187, p = .002), as was a behavioral strategy involving the consumption of food or drink (B = .295, p = .003). Together, these results suggest that the preventive effect of coping on lapsing is not mediated through reduction in urge level. Furthermore, few differential benefits of specific coping strategies for preventing lapses or decreasing urge levels were found.

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**RP-025**

**VALIDITY OF SELF-REPORTED SMOKING STATUS BY PARTICIPANTS IN SMOKING CESSATION PROGRAMS**

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**OBJECTIVE:** The objective of this study was to evaluate the reliability of the results of self-reporting (SR) as an indicator for abstinence among persons following a smoking cessation treatment, and to assess whether measuring carbon monoxide (CO) in expired air is essential or not to confirm smoking status.

**MATERIALS AND METHODS:** Data were collected from participants in a multicenter, prospective, longitudinal study carried out in patients >18 years of age who attended five smoking cessation units, and who were treated with nicotine replacement therapy (NRT) and/or bupropion. Evaluations were made at 15, 30, 60, 90, and 180 days. In each visit, abstinence was determined by SR, by CO measurement in expired air, and by both methods combined. The sensitivity and specificity of SR, as well as its positive, negative, and general predictive value were calculated with respect to CO level measurement.

**RESULTS:** The study group included 904 smokers, 476 men and 428 women, with a mean age of 42.5±10.1 years. Of the 904 persons who began, 820, 776, 687, 719 and 679 respectively were present at the follow-up sessions. Point prevalence of abstinence after 15 days and after 180 days was deemed by SR to be 74.5% and at 57.6%. By CO level in expired air, abstinence was found to be at 75.7% and 59.4%. No significant differences were observed (p<0.05) among the three procedures after 15, 30, 60, 90 and 180 days.

**CONCLUSIONS:** These findings suggest that SR among adult participants in smoking cessation programs may be relied upon for accurate estimates of abstinence. Therefore, measuring CO levels in expired air would not be always necessary, though their determination in the follow-up process may be recommendable as a motivational factor for the patient.

**KEY WORDS:** smoking, cessation, self-reporting, carbon monoxide, sensitivity, specificity.

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**RP-027**

**SMOKING CESSATION FOR PARENTS IN THE CONTEXT OF PEDIATRIC CARE**

Judith A. Groner*, Gina French, Matthew Roberts, Carlotta Hughes-Culp

**Background:** Pediatric care may be one of the few contacts for parental smokers with the health care delivery system. Objective: To describe the outcomes of a program designed to offer individual smoking cessation counseling and treatment to parents of children seen in outpatient pediatric settings. Methods: “Quit for Good” is a collaborative program designed to offer free evidence-based smoking cessation counseling and pharmacotherapy in clinical settings. The services include meeting with a trained smoking cessation counselor, receiving free nicotine replacement products, and follow-up phone calls and visits as necessary. We are reporting on 70 parents of pediatric patients who were offered “Quit for Good” services. Results: The baseline characteristics of the population are presented [mean (SD) and n (%)]:

- Age (years) - 31.3 (8.8); cigarettes/day - 20.5 (12.2); Stage of change - Precontemplation 6 (10%); Contemplation 38 (66%); Preparation 12 (20%); Action 1 (2%); Relapse 1 (2%). Fifty-one subjects (72%) had only one initial contact with the counselor; 7 (10%) had two contacts, and 12 (18%) had more than two contacts. Two (3%) of subjects reported being smoke-free one month after the initial counseling. Linear regression modeling revealed that there was a significant (p = 0.04) interaction between contacts over time and stage of change, with participants moving closer toward quitting with more contacts with the counselor. Similarly, there was a significant (p = 0.006) interaction between contacts over time and cigarettes/day, with participants smoking fewer cigarettes with more contacts with the counselor. Conclusions: Parents of pediatric patients are often not ready to quit smoking. However, interaction with the counselor has a significant effect in moving parents or the “contemplation ladder” toward quitting and decreasing their daily cigarette consumption.

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**RP-026**

**MULTI-MODAL EDUCATIONAL INTERVENTIONS PROMOTE CLINICAL PRACTICE GUIDELINE IMPLEMENTATION IN THE TREATMENT OF TOBACCO USE AND DEPENDENCE**

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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, implementation by healthcare clinicians varies widely. The HealthCare Partnership Continuing Education & Training Unit at The University of Arizona Health Sciences Center, a component of Arizona’s comprehensive tobacco control program, initiated a Speakers’ Bureau in 2000 to promote Guideline implementation. The Unit strategically combined continuing education programs with academic detailing and opinion leader active involvement targeted to healthcare providers. Enabling resources complementing the educational interventions included a proactive fax referral system, pharmacotherapy vouchers, and patient access to free telephonic and face-to-face cessation interventions. Data from July 2002 through December 2003 were reviewed to assess the impact of academic detailing along with opinion leader involvement on referral rates. Client referral rates for cessation services from targeted healthcare clinicians increased compared to rates from clinicians at sites without targeted interventions. Clinicians involved in detailing interventions optimized utilization of state resources in treating tobacco use and dependence; some clinicians also broadened their tobacco control activities to address policy, training, and healthcare accreditation issues. By creating a web of academic details from targeted healthcare clinicians increased compared to rates from clinicians at December 2003 were reviewed to assess the impact of academic detailing along with opinion leader active involvement targeted to healthcare providers. Enabling resources complementing the educational interventions included a proactive fax referral system, pharmacotherapy vouchers, and patient access to free telephonic and face-to-face cessation interventions. Data from July 2002 through December 2003 were reviewed to assess the impact of academic detailing along with opinion leader involvement on referral rates. Client referral rates for cessation services from targeted healthcare clinicians increased compared to rates from clinicians at sites without targeted interventions. Clinicians involved in detailing interventions optimized utilization of state resources in treating tobacco use and dependence; some clinicians also broadened their tobacco control activities to address policy, training, and healthcare accreditation issues. By creating a web of academic details from targeted healthcare clinicians increased compared to rates from clinicians at December 2003 were reviewed to assess the impact of academic detailing along with opinion leader active involvement targeted to healthcare providers. Enabling resources complementing the educational interventions included a proactive fax referral system, pharmacotherapy vouchers, and patient access to free telephonic and face-to-face cessation interventions. Data from July 2002 through December 2003 were reviewed to assess the impact of academic detailing along with opinion leader involvement on referral rates. Client referral rates for cessation services from targeted healthcare clinicians increased compared to rates from clinicians at sites without targeted interventions. Clinicians involved in detailing interventions optimized utilization of state resources in treating tobacco use and dependence; some clinicians also broadened their tobacco control activities to address policy, training, and healthcare accreditation issues. By creating a web of academic details from targeted healthcare clinicians increased compared to rates from clinicians at
**RP-029**

**AFFECTING CHANGE: PRELIMINARY FINDINGS OF THE PEDIATRIC RESIDENCY TRAINING PROGRAM ON TOBACCO**

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BACKGROUND: Despite published effectiveness of smoking cessation interventions, only a minority of smokers receive sophisticated assistance from a health care provider. While provider knowledge and attitudes may be modifiable, their relationship to self-efficacy and subsequent behavior is poorly understood.

OBJECTIVE: To evaluate the relationship between tobacco treatment-related knowledge, attitudes, and self-efficacy among a representative sample of health care providers in general practice. Methods: Following validation of content and construct, a 23-item, closed-response questionnaire assessing the 3 axes was administered to 192 health care provider volunteers.

RESULTS: Respondents fared well on knowledge items. For example, 75% of respondents correctly answered at least 4 out of 5 questions derived from AHFQ guidelines. Respondents generally held favorable attitudes toward tobacco treatment. They perceived tobacco use as a chronic disease (87%), felt comfortable providing brief counseling (87%) and prescribing pharmacologic support (72%), and felt they had sufficient time to intervene (53%). However measures of self-efficacy were unexpectedly poor: respondents felt cessation counseling falls on deaf ears (57%), identified 0 opportunities to write a prescription in the prior week (65%), had <2 opportunities / week for brief counseling (65%), and experienced 0 successful cessation attempts in the prior month (41%). Measured self-efficacy did not correlate with knowledge or self-reported attitudes.

CONCLUSION: It appears that tobacco-related knowledge and attitudes may not be related to provider self-efficacy. From a practical standpoint, educational efforts aimed at changing provider behavior should not focus purely on knowledge base or attitudes about cessation, but should also attempt to ameliorate the sense of helplessness. Explanatory models of provider behavior should incorporate this observed effect.

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**RP-030**

**TOBACCO-RELATED KNOWLEDGE AND ATTITUDES DO NOT RELATE TO PROVIDER SELF-EFFICACY**

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**RP-031**

**KANSAS OFFICE-BASED NURSES’ EVALUATION OF PATIENT TOBACCO CESSION ACTIVITIES**

Marjorie J. Good, Linda M. Frazier, Ruth Wetta-Hall, Elizabeth Ablah*, Craig A. Molgaard

This study examines the tobacco cessation efforts of nurses working in primary care settings. Methods: A 43-item questionnaire was mailed to 1,036 office-based nurses located throughout Kansas. With a response rate of 50.1%, 415 questionnaires were available for analysis. Results: While 89% of respondents encountered patients who smoke on a daily or weekly basis, only 51% reported documenting their patients’ tobacco use, and 38% assessed patients’ readiness to quit. Two-thirds (66%) of nurses believed that tobacco management was part of their role, but only 35% provided cessation advice, 23% recommended nicotine replacement therapy and 14% provided coping techniques. Nurses cited barriers such as perceiving patients as disinterested or unmotivated to quit (65%), and having little time (55%), skills (32%) and knowledge (25%). Most (91%) agreed that they needed additional tobacco control education. Nurses who were Advanced Registered Nurse Practitioners (ARNPs) or Clinical Nurse Specialists (CNSs) were more likely to feel confident about their smoking cessation counseling skills compared to nurses with less education (66.7% vs 31.2%, P<0.01). Conclusion: Office-based nurses identified specific barriers that could be addressed through professional education about tobacco management.

_Supported by the American Cancer Society._

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**RP-032**

**PREDICTING SUCCESS IN A NETWORK OF TOBACCO CESSION SITES SERVING RURAL, LOW SES ARKANSANS**

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The aim of this study is to examine the correlates of successful treatment completion and smoking cessation in the context of a statewide network of intensive, outpatient tobacco cessation clinics serving rural, low-income and low SES populations. Tobacco interventionists from a variety of backgrounds were hired by participating sites and attended a 5-day training in treatment delivery. All treatment was offered to participants free of charge. Participant (n = 1488) data from the first 9 months of operation were analyzed. Most participants (71%) reported 12 years of school or less and incomes of less than $30,000 (84%). All participants lived in rural Arkansas. Treatment completion rate was 50%, while the post-treatment quit rate for treatment completers was 74%. Logistic regression was used to model treatment completion and smoking status post-treatment as a function of clinic/site, age, sex, income, ethnicity, education, work status, marital status, level of dependence, and stress level. Clinic/site, level of dependence, and age were significant predictors of both treatment completion and smoking status post-treatment. Several sites were significantly more successful at patient retention in treatment and assisting their patients with quitting. The lower the level of dependence, as measured by the Fagerstrom Test of Nicotine Dependence, the greater the likelihood that patients would complete treatment and quit smoking. Older patients were also more likely to complete treatment and quit smoking. Given a preponderance of population demographics often associated with negative outcomes, clinic/site treatment delivery characteristics, level of dependence and age emerge as important predictors of treatment success.

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THE EFFECT OF CONTROLLABILITY ON SUBJECTIVE RESPONSES TO SMOKING IN THE NATURAL ENVIRONMENT

Delwyn Catley, Ph.D.*, University of Missouri–Kansas City; James E. Grobe, Ph.D., S. Post, C. Coffey, and T. Hutcheson, University of Kansas.

Behavioral pharmacology research suggests that reducing the degree of control over drug intake may reduce the rewarding effects of drug consumption. No study has directly examined the effect of manipulating controllability over tobacco smoking on rewarding effects in the natural environment. If generalizable beyond the laboratory this effect may be useful for improving behavioral interventions. In this field experiment we examined the effects of manipulating controllability using a hand-held computer (PDA) and a within-subjects design. In the controllable phase 24 regular smokers (mean age = 25, 46% female) smoked ad-lib for 3 days while engaged in usual daily activities. The time of each cigarette was recorded via a hand-held computer (PDA). In the second phase (yoked phase), scheduled for the same days of the week as phase one, participants smoked only when prompted by the PDA which was programmed to prompt them using their previously recorded ad-lib schedule. On 4 smoking occasions spread across each day of both phases, participants responded to subjective measures of reward from smoking, craving, and mood states. Mixed models examining differences between the phases in these measures revealed that participants reported significantly less reward from smoking (F(2,32)=24.44, p<0.001), more negative mood (F(2,32)=27.93, p<0.001), and less arousal (F(2,32)=9.02, p<0.007) during the reduced control (or yoked) phase compared to the controllable phase. Results suggest manipulating controllability may be a promising avenue for further research in clinical interventions.

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MOTIVATIONAL GOAL ORIENTATIONS AND THE SMOKING CESSATION PROCESS

Nicholas E. Perrine, M.S.*

Learning and Performance personality Goal Orientations influence the amount of time that is spent using self-regulatory behaviors as well as influencing performance outcomes. A Learning Orientation is related to positive self-regulatory behaviors and subsequent performance outcomes. A Performance orientation is related to the avoidance of challenging tasks and a helpless response pattern to failure (Dweck & Leggett, 1988; Locke et al., 1981). A Performance orientation is expected to be positively related to failed abstinence at 6-months follow-up (i.e., point-prevalence) and deleterious failure attributions. Conversely, Learning orientation is expected to be positively associated with abstinence at 6-months follow-up. 100 participants completed the Goal Orientation scale prior to their first smoking cessation session. Of those 100 participants, 50 participants completed questions concerning smoking behavior on the follow-up survey 6-months later. Participants who reported smoking on the follow-up survey completed questions assessing attributions concerning their inability to quit smoking. Logistic regression was used to determine the ability of Learning and Performance Orientations to predict smoking behavior 6-months later. Results suggested that the Goal Orientation model provided a significant fit to the data predicting abstinence, chi-square = 6.10, p<0.05. Individuals with higher scores on the Performance Orientation tended to be smoking at follow-up, Wald = 4.48. Linear regression was used to determine the ability of Goal Orientations to predict deleterious failure attributions among the 30 participants who smoked at follow-up. The Goal Orientation model significantly predicted attribution style at 6-months, F(2,28)=3.53, p<0.05. Higher scores on the Performance Orientation significantly predicted uncontrollable attributions for failure, t(30)=2.60, p<0.05. Thus, Performance Orientations predicted both the adoption of uncontrollable attributions concerning reasons for the inability to quit smoking and increased smoking 6-months following formal smoking cessation services.

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CHANGES IN REASONS FOR QUITTING OVER TIME

Nicholas E. Perrine, M.S.*, Colorado State University

The Reasons for Quitting Scale (RFQ) assess intrinsic and extrinsic reasons for quitting tobacco. Extrinsic motivation is associated with increased occurrences of relapse and failure of long-term abstinence. Intrinsic motivation is associated with self-regulatory behavior and long-term abstinence (Curry et al., 1990; 1991). The current study builds upon past research by incorporating a longitudinal design to capture changes in RFQ over time. Detrimental effects of extrinsic RFQ are expected to occur due to the changing nature of external sources of motivation. Extrinsic RFQ are expected to decrease as time from initial quitting increases. Decreases in extrinsic RFQ likely occur as social support members become less cognizant of an individual’s quitting. Self-generated intrinsic RFQ are expected to remain stable as time from quitting increases. 32 research participants completed the RFQ scale prior to their first smoking cessation session as well as at both 3- and 6-months follow-up. Data was analyzed using repeated measures General Linear Models assessing changes in RFQ. Wilks’ Lambda test for the intrinsic RFQ model was not significant, F(2,30)=.37, p>0.05, suggesting that intrinsic RFQ did not change over time. Mean scores at each assessment were: 38.44, 38.00, and 39.59, respectively. Wilks’ Lambda test for the extrinsic RFQ model was significant, F(2,30)=7.36, p<0.01, suggesting that extrinsic RFQ significantly changed over time. Mean scores at each assessment were: 25.84, 30.63, and 25.78, respectively. Changes in extrinsic RFQ represented a quadratic relationship over time, F(1, 31) = 13.30, p<0.001. Therefore, beneficial effects of intrinsic motivation may occur due to the stable nature of intrinsic RFQ over time. Detrimental effects of extrinsic motivation may occur due to significant decreases in extrinsic RFQ over time. Health educators may emphasize intrinsic as opposed to extrinsic motivation among clients attempting to quit.

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INCREASING REFERRALS TO TELEPHONE COUNSELING FOR SMOKING CESSATION

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BACKGROUND: Despite widespread availability of free and effective smoking cessation Quitlines, few healthcare organizations refer patients to them. We tested the effectiveness of a telephone care coordination program (TCCP) for smoking cessation aimed at increasing state Quitline referrals and providing smoking cessation medication management.

METHODS: We randomly assigned 10/18 sites in 2 California Veterans Health Administration (VA) healthcare systems to receive the 2-month TTCP intervention. After the primary care provider made a simple referral, the telephone care coordinator contacted the patient to help them contact the state Quitline. The coordinator arranged smoking cessation medications and monitored use during follow-up contact. Outcome measures were the number of patients starting treatment and the number who completed the program and quit smoking.

RESULTS: At baseline, providers reported essentially never referring patients to Quitlines. During the first seven months, TTCP received 2,221 referrals. Of the 874 referred patients (39%) who began the program, 87% completed counseling and began the care management program, and 95% were prescribed medications. At least 28% of patients have successfully completed the TTCP.

CONCLUSIONS: The TTCP dramatically increased use of the state Quitline. It provides an effective method to increase Quitline referrals and coordinate smoking cessation medications. TTCP now accounts for 5-10% of state Quitline calls, the most referrals from any healthcare system. It gives medical centers another option, increasing access to smoking cessation treatment without overwhelming primary care providers.

This study was funded by the VA Quality Enhancement Research Initiative on Substance Use Disorder.

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RP-037  
**SMOKER DEMOGRAPHICS PROVIDE CRITERIA FOR EFFECTIVE RECRUITMENT ADVERTISING**

Gloria K. Meyer*, M.A., Daniel Lawrence, Ph.D., Michael Fiore, M.D., M.P.H.

BACKGROUND: As demographic patterns of smoking have changed, soliciting smokers for cessation research has become more challenging. As newspaper readership has declined in the general population and among smokers, and as costs have increased, new advertising strategies have become necessary.

METHODS: The University of Wisconsin Center for Tobacco Research and Intervention (UW-CTRI) conducts numerous smoking cessation clinical trials that regularly solicit smokers. To ascertain the most effective recruitment strategies for smokers, UW-CTRI has systematically evaluated the demographics of study enrollees and potential media to identify the most cost-effective media advertising approaches. Telephone screeners routinely attempt to ascertain the media that prompted the potential participant to volunteer for the study. Comparisons of advertising effectiveness and cost are created to determine the direction of future recruitment.

RESULTS: UW-CTRI evaluated the use of inexpensive television advertising to recruit study and program participants, primarily daytime and late night television programs, which target lower income, less-educated audiences with higher smoking rates. These programs generate the highest recruitment results at the lowest cost.

LIMITATIONS: Gathering media information from respondents is not always possible, especially answering machine messages. In addition, media outlets do not always have complete information on the characteristics of viewers of particular programs or, if they do, they must be prompted to divulge the information.

FUTURE RESEARCH: Using time of call, more detailed information can be gathered about specific programming and their effectiveness in eliciting calls. In addition, more research could be conducted on how the method of recruitment affects research results.

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RP-038  
**COST OF PROVIDING TELEPHONE CASE MANAGEMENT FOR SMOKING CESSATION**


OBJECTIVES: Health care organizations are increasingly interested in tobacco control, but are unsure how best to allocate resources. Both cost and effectiveness vary dramatically between primary care-based treatment, telephone counseling, and intensive smoking cessation programs. We calculated the cost of a telephone care coordination program (TCCP) for smoking cessation, and compared it with other treatment approaches.

METHODS: TCCP is a demonstration project to increase referrals to a free state Quitline for smoking cessation. Patients receive 5-7 calls over 2 months, providing counseling and medication management. We separated the cost/patient into: 1) telephone counseling time, 2) administrative time, 3) pharmacist time, and 5) medication cost. We compared this to the cost of treatment within primary care or within a smoking cessation program, factoring in counseling duration, likelihood of attending a smoking cessation program, and success rate.

RESULTS: The cost for a full treatment course for TCCP was $158.75 ($38.75 for staff time and $120 for medications) vs. $153.75 within primary care or $157.50 within a smoking cessation program. The cost to produce one successful quitter, however, was significantly lower for TCCP ($293/quitter) than for the smoking cessation program ($418/quitter) or primary care-based treatment ($650/quitter).

CONCLUSIONS: The cost/quitter was lower for TCCP and highest for primary care-based treatment. The costs of various forms of smoking cessation treatment are essential to an organized approach to tobacco control. Telephone counseling is a reasonably-priced alternate approach to providing effective care, improving access, and leveraging physician time.

This study was funded by the VA Quality Enhancement Research Initiative on Substance Use Disorder.

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RP-039  
**SMOKING CESSATION INFORMATION SEEKING ON THE WEB: CHARACTERISTICS OF QUITNET VISITORS**

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While registrants of smoking cessation web sites have been characterized in the past, information on the characteristics of information and treatment seekers has been lacking. An estimated 6-7 million Americans have actively searched online for information on quitting smoking (1). Close to 150,000 individuals searching for information on quitting smoking are referred to www.quitnet.org by search engines each year. By taking advantage of the prominent placement of the site in the major search engines, we will further describe this population. Approximately 1000 individuals arriving at www.quitnet.org or www.quitnet.com from Google, Yahoo or MSN search engines, who had searched on “quit smoking” (or a variant on the phrase) were targeted for inclusion. The QuitNet webservlet identified these individuals in real time an displayed a survey invitation “splash screen” in place of the standard QuitNet home page. Individuals agreeing to participate in the survey were directed to a brief 3-4 page questionnaire: those declining were sent to the the QuitNet home page. Over a period of 7 days, approximately 3000 individuals were targeted (representing 10% of total visits from all sources) of which 30% accepted and completed the survey. Results from this survey, including demographics, stage of change, information being sought and utility ratings of potential site features will be described. For those participants that continued on to use the site, this information will be correlated to actual site behavior including feature utilization, utilization intensity (number of sessions and total duration.) For those that registered for tailored services (approximately 45%) this will also be correlated to process data including the setting of a quit date, dependence level, social support metrics and other available variables. (1) Fox, S., Fallows, D. (July 16, 2003). Internet health resources: Health searches and email have become more commonplace, but there is room for improvement in searches and overall Internet access. URL http://www.pewinternet.org/reports/pdfs/PIP_Health_Report_July_2003.pdf. Produced by Pew Internet and American Life Project. No funding.

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RP-040  
**USE PATTERNS OF INTERNET-BASED SYSTEMS FOR SMOKING CESSATION AND SMOKING OUTCOME**

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AIM: The goal of this study is to determine benefits of using interactive health communications (IHCs) designed for smoking cessation by examining program use patterns of smokers given access to the Comprehensive Health Enhancement Support System (CHESS) Quitting Smoking For Life website.

DESIGN: As part of a clinical trial designed to evaluate the efficacy of the CHESS Quitting Smoking for Life website, participants were assigned to receive brief treatment (BT) or BT plus access to CHESS for up to 90 days (BT+CHESS). BT consisted of bupropion SR pharmacotherapy for 9 weeks, three counseling sessions and a quit guide booklet. Use patterns were analyzed by examining instances of distinct page views per participant. Smoking status was verified by exhaled CO.

RESULTS: The sample (N=213) was primarily white (78%); 20% were African-American. Mean (SD) age was 40.0 (11.8) years; 53% were male; mean years of smoking was 22.4(SD=11.3) and current cigarettes/day = 21.5 (SD=9.3). The median (22 views) was used to group CHESS users into low and high use groups. At 12 weeks post-quit, 41% of high use participants were abstinent compared to only 16% of low use and 21% of BT participants, chi-square(2)=8.3, p=0.01

CONCLUSION: Participants with greater CHESS activity had greater success in achieving 12-week abstinence. IHCs hold promise for providing access to treatment information and support during a quit attempt and increase users’ likelihood of successfully quitting.

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RP-041  USABILITY TESTING OF AN INTERACTIVE COMPUTER PROGRAM TO PROMOTE SMOKING CESSATION IN LOW INCOME RURAL COMMUNITIES

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Access to information about the health effects of smoking and availability of resources to assist with cessation are limited for low-income rural smokers. Multimedia instructional technology is an innovative and efficient method to deliver smoking cessation information in the primary care setting and may increase motivation to quit. The purpose of this study was to develop and pilot test an interactive computer program to be used as an adjunct to usual clinical care to reduce smoking in low-income rural communities in Appalachia and Indiana. The program delivers targeted and tailored information driven by the user’s input. An advisory group panel was consulted to ensure a user-centered program design. Usability testing was conducted with 16 participants from a rural Indiana clinic. After using the computer program, participants completed a brief satisfaction instrument and a face-to-face interview with a researcher. Satisfaction with the program was high (mean satisfaction score was 90.4 with 110 indicating highest possible satisfaction). Average time for completing the computer program was 23.88 minutes. There was a highly significant correlation (p=0.004) between participants reporting that the program made them contemplate cessation and increased knowledge of nicotine replacement therapy. The results suggest that interactive computer technology is feasible and acceptable for promoting smoking cessation in low-income rural communities. A randomized, controlled trial testing the efficacy of the interactive program is currently underway.

Supported by the Mary Margaret Walther Program for Cancer Care Research, Walther Cancer Institute.

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RP-042  PILOT STUDY OF A TECHNOLOGY-ENHANCED RELAPSE PREVENTION INTERVENTION

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Each year over 15 million smokers stop smoking for at least one day in an attempt to quit; yet, more than 85% of these resume smoking within one month after quitting. Telephone intervention has been shown to be effective in reducing relapse after smoking cessation, but only 5-10% of formal treatment programs provide access to relapse prevention services following smoking cessation. The purpose of this study was to develop and pilot test an integrated system using interactive voice response technology (IVR) and tailored telephone counseling for relapse prevention in smoking cessation. Participants were recruited from a smoking cessation program affiliated with an inner-city health network. A computerized telephone system called participants to monitor progress and provide brief messages about quitting smoking at predetermined intervals for twelve weeks post-quit. A relational database to store data captured by the IVR system was established. An automatic query identified participants who were at high risk for relapse. Trained counselors then delivered tailored telephone relapse prevention intervention to at-risk participants. The sample consisted of 65 usual care and 98 intervention participants. Seven-day point prevalence abstinence rate was 21% for the usual care group and 47% for intervention participants. A preliminary intention-to-treat analysis detected a statistically significant difference in abstinence rates between groups (p = .017). Preliminary results suggest that IVR technology is a useful adjuvant to telephone relapse prevention counseling with the potential for significant impact at a relatively low cost.

Supported by the Mary Margaret Walther Program for Cancer Care Research.

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RP-043  THE DEVELOPMENT OF START SMART: STUDENTS MAKING ADVERTISEMENTS TO REDUCE TOBACCO


It is estimated that each year, one million children start smoking in the United States, with most children initiating the habit during early adolescence. Since tobacco attitudes and behaviors develop during childhood and adolescence, tobacco programs targeting youth during this time period are imperative. Although there are numerous tobacco prevention programs available for school settings, few programs meet current recommendations suggested by the Center for Disease Control (CDC). In fact, in a recent study conducted by Wenter et al. (2002), only 4% of middle schools across the nation met all seven recommendations. In response to the need for comprehensive programs that meet the CDC criteria for delivering effective tobacco prevention messages to youth, Danya International, Inc., with funding from the National Institute of Drug Abuse (NIDA) has designed a multifaceted, innovative school based smoking-prevention package entitled Students Making Advertisements to Reduce Tobacco (SMART). Based on theories of social influence and using interactive teaching techniques, the SMART package transitions children from observing anti-tobacco messages, to learning the skills to both identify and resist tobacco use, culminating in student participation in developing smoking prevention advertisements. During phase I of the project period, Danya project staff has developed the eight-session curriculum and youth workbook. A pilot study was conducted to examine the feasibility and the acceptability of the program. Fifteen students from a middle school in Montgomery County, Maryland participated in this pilot study. Project development, Focus group data, and pilot results will be presented. In addition, lessons learned and potential revisions to the program will also be discussed.

The project described is a Phase I Small Business Innovation Research Grant funded by the National Institute on Drug Abuse.

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RP-044  THE EFFECTIVENESS OF A BRIEF TOBACCO USE CESSATION INTERVENTION ON MENTAL HEALTH CARE PROVIDERS’ BEHAVIOR REGARDING PATIENT SMOKING STATUS


Research shows that health professionals who integrate brief smoking cessation interventions into their services can help patients quit smoking and that mentally ill youth are at particular risk for initiating and maintaining tobacco use. This project assessed the effectiveness of disseminating an evidenced-based brief intervention for tobacco use cessation among 35 health professionals who provide mental health services to youth in Toledo and Lucas County, Ohio. The sample was predominantly female (65.7%) and white (85.7%), with the majority of respondents (51.4%) under 40. Providers were assigned to control and intervention groups and given pre- and post-test surveys. Surveys were based on Prochaska’s and DiClemente’s transtheoretical model of change and assessed providers’ behavior and attitudes regarding their patients’ smoking status. The intervention group received training on how to incorporate a brief tobacco use cessation intervention, based on the U.S. Public Health Service’s 5A’s model, into their present mental health services. Analysis of covariance of pre- and post-test surveys revealed that there was no significant difference between the control and intervention group in behavior regarding patient smoking status. The majority of providers (48.6%) were in the precontemplation stage, meaning that they were not regularly asking patients about their smoking status, and remained in that stage after the intervention. Plans for a preliminary intervention designed to move providers from the precontemplation stage into the contemplation and preparation stages of Prochaska’s and DiClemente’s model will be discussed.

Funding is provided through the Northwest Ohio Tobacco Control Strategic Alliance by the Ohio Tobacco Use Prevention and Control Foundation.

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TOBACCO SMOKING FOLLOWING TREATMENT FOR COCAINE DEPENDENCE

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Incorporation of smoking cessation into cocaine treatment programs continues to meet with resistance for several reasons. A major concern of treatment providers is that crack cocaine abusers may tend to substitute one drug for the other. This is true, successful treatment of crack cocaine abuse should lead to an increase in tobacco smoking. We compared cigarette smoking at admission, end of treatment and 9-month follow up for 168 cocaine dependent patients entering a 12-week intensive outpatient treatment program for drug abuse. Smoking cessation was not a part of treatment. As expected cocaine dependent patients improved with treatment and showed significant reduction in composite scores on the Addiction Severity Index (ASI). There were no significant changes in number of cigarettes smoked per day or scores on the Fagerstrom Test for Nicotine dependence (FTND) from baseline to end of treatment or follow up. Also, there were no differences in the proportions of non-smokers and smokers who changed their smoking habits over the treatment and followup period. At follow up subjects who were abstinent as well as those using cocaine showed no changes in tobacco smoking. There is no evidence that reduction in crack cocaine smoking following treatment is accompanied by an increase in tobacco smoking. It appears that concerns over tobacco being substituted for cocaine may be unfounded in this population.

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SMOKING CESSATION AMONG AFRICAN-AMERICAN MEN DURING RESIDENTIAL SUBSTANCE ABUSE REHABILITATION: A PILOT STUDY

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BACKGROUND: Mounting evidence indicates that recovering, substance dependent individuals can quit smoking without risking their sobriety, and some data indicate that smoking cessation may even improve long-term abstinence from other drug use. However, data regarding African-Americans in this context are limited. To address this need, we examined the efficacy of a smoking cessation intervention for African-American men receiving concurrent treatment for alcohol and other drug dependence, and also examined predictors of short-term abstinence during the intervention period.

METHODS: We conducted a retrospective chart review of 94 African-American male patients who volunteered to enroll in the Cincinnati VA’s Clean Break program. The program consisted of once daily, 30-minute-long behavioral group therapy sessions. Eighty-five percent of the men were prescribed transdermal nicotine replacement. Smoking abstinence was monitored using patient self-report and verified with expired CO levels <10 ppm.

RESULTS: Forty-nine percent of the patients achieved abstinence while in Clean Break. Logistic regression results indicated that length of stay in the program (chi-square = 5.929, alpha = 0.015) and number of years smoking (chi-square = 3.688, alpha = 0.49) were significant predictors of abstinence.

CONCLUSIONS: Roughly half of our sample of African-American men in residential substance abuse rehabilitation achieved at least short-term abstinence from cigarette smoking while in residential treatment. Results indicate that African-American men who stay longer in smoking cessation treatment and who have smoked fewer years have better odds of achieving abstinence in this context.

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RP-049  A META-ANALYSIS OF SMOKING CESSION INTERVENTIONS WITH INDIVIDUALS IN SUBSTANCE ABUSE TREATMENT OR RECOVERY

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Smoking cessation interventions have traditionally been excluded from drug treatment settings. A meta-analysis was conducted to examine the effectiveness of smoking cessation interventions evaluated with individuals with current or past substance abuse problems. An extensive literature search (1986 – 2002) identified 19 randomized controlled trials of smoking cessation interventions evaluated with individuals in current addictions treatment (N = 12) or recovery (N = 7). Smoking and substance use outcomes at post-treatment and long-term follow up (6- to 12-months) were abstracted by two independent reviewers and summarized with random-effects models. Intervention effects for smoking cessation were significant at post-treatment for participants in addictions treatment (relative risk [RR] 2.03, 95% confidence interval [CI] 1.21, 3.39) and recovery (RR 1.77; 95% CI 1.37, 2.30). Higher rates of cessation were observed among individuals in recovery compared to current addictions treatment, however, the magnitude of intervention effects between the two groups was comparable (p = .651). At long-term follow up, intervention effects on smoking cessation were no longer significant. For participants in addictions treatment, smoking cessation interventions were associated with increased long-term abstinence from alcohol and illicit drugs (RR 1.25, 95% CI 1.07, 1.46). The findings suggest short-term success with smoking cessation among individuals in addictions treatment and recovery. Innovative strategies for supporting long-term cessation are needed. Contrary to previous concerns, smoking cessation interventions delivered during addictions treatment appeared to enhance rather than compromise long-term sobriety.

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RP-050  METHADONE PATIENTS’ SMOKING PATTERNS VARY BY ETHNICITY AND DEGREE OF ACCULTURATION

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Worldwide, 250,000 people are in Methadone Maintenance Treatment (MMT) and 77-80% smoke cigarettes. Although smoking patterns and quit rates are known to vary by ethnicity in the general population, little is known about these factors among drug treatment patients. We surveyed MMT patients (n = 389) at four clinics in New York City to improve our understanding of differences by ethnicity. Most respondents were Hispanic (70%) and male (56%); many were bilingual (42%); fewer spoke only Spanish (18%); few were non-Hispanic (80%) and Hispanic respondents (84%) had similar prevalence as proportions of current smokers. Persons who spoke only Spanish at home had a significantly lower smoking prevalence (70%) compared to all other respondents (85%). Stage of change for smoking varied by ethnicity and language spoken. Among Hispanic smokers 33% were in pre-contemplation, 48% contemplating, and 19% preparing to quit. We compared this to Hispanics who spoke English in the home: 24%, 47%, and 30% respectively, and Hispanics who spoke only Spanish in the home: 13%, 48%, and 40% respectively. We also present ethnic differences in quit smoking medication use, quit attempts, and other smoking patterns. Speaking Spanish in the home is one measure of degree of acculturation. Even in high prevalence populations smoking patterns and readiness to quit may vary by ethnicity and degree of acculturation. Future research and programs should consider these factors when designing interventions for patients in drug treatment and other treatment settings.

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RP-051  INSTRUCTIONS ABOUT NICOTINE DOSE INFLUENCE ACUTE RESPONSES TO NASAL SPRAY ADMINISTRATION

Kenneth A. Perkins*, Lynette R. Jacobs, Lindsey Clark, Cynthia A. Conklin, Michael Sayette, Annette S. Wilson

Beliefs about the drug content of a substance might strongly influence subjective and reinforcing responses to the substance (i.e., “placebo” effects). We examined the effects of a placebo nasal spray containing no nicotine as a function of instructions about the nicotine content of the spray (“told nicotine” versus “told no nicotine”). Smokers (n=49) not interested in quitting smoking abstained overnight prior to one session in which they were randomly assigned to one of three groups, involving one of the two instructional sets or a group that got no spray. Following dose instructions, the two spray groups were administered one set of 4 sprays and then rated them intermittently on items related to “reward” (e.g., “liking”), amount they would pay for more) and other effects. At the same time points, they also rated mood, craving, and withdrawal, and had heart rate and blood pressure measured. Reinforcement was then determined by the number of ad lib sprays they self-administered during a 20-min period. The no spray group simply rested quietly during the session while measures were obtained at the same time points. Those in the “told nicotine” group reported greater spray ratings of “how much nicotine,” “liking,” “satisfying,” “buzz/head rush,” and “similar to smoking” compared to the “told no nicotine” group. Craving decreased more for those “told nicotine” versus those “told no nicotine,” but also decreased more for those “told no nicotine” compared to the no spray group. Groups did not differ in amount they would pay for more sprays, withdrawal, mood, cardiovascular responses, or in spray self-administration. In conclusion, instructions about the nicotine content of a novel delivery device (nasal spray) can influence spray ratings and reduce craving but are limited in their effects on other measures of drug response.

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RP-052  DECREASING NICOTINE CONTENT REDUCES PHYSIOLOGICAL AND PSYCHOLOGICAL EFFECTS OF SMOKING

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Cigarette smoking elicits increases in heart rate, alters subjective reports of mood, and produces reliable alterations in subjective reports of smoking sensations. The relative contribution of nicotine alone versus cigarette smoke containing nicotine is under investigation. Six female and two male volunteers (average age 24.9 ± 4.2 yrs) compared the characteristics of their usual brand of cigarette to a commercially available cigarette with varying levels of nicotine. Subjects smoked their own brand of cigarette after at least a two hour abstinence period. Then at 30 minute intervals, they smoked one of three varying strength cigarettes in a counterbalanced order (nicotine content: 0.6 mg, 0.3 mg, or 0.05 mg). Smoking satisfaction and sensations were measured on a 13-item cigarette evaluation questionnaire. Additionally, visual analog scales measured self-reported changes in happy, stimulated, anxious, desire to smoke, and desire not to smoke. Heart rate and skin temperature were recorded continuously. Results: As nicotine content decreased, there were clear decreases in all ratings on the evaluation questionnaire with the placebo nicotine cigarette always rated lower or less potent than the subject’s usual brand. “Desire to Smoke” scores were low following each cigarette and gradually increased during the 30 minute interval, but were not dose-related. Heart rate was significantly increased by the subject’s usual brand, but was not affected by any of the low/nicotine-free cigarettes. These results suggest that nicotine content is a major factor in determining both the physiological and subjective effects of smoking and that nicotine-free cigarettes as a treatment may need further assessment.

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RP-053  GENDER DIFFERENCES IN CUE REACTIVITY AND CRAVING IN NICOTINE DEPENDENT INDIVIDUALS

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BACKGROUND: Previous reports have indicated that there may be gender differences in cue-reactivity to in vivo and stress/negative affect smoking cues among nicotine dependent smokers. This is a preliminary report of an on-going study examining gender differences and menstrual cycle effects on cue-reactivity among nicotine dependent smokers. It was predicted that males, relative to females, would experience greater reactivity and craving during in vivo smoking cues and females would exhibit greater reactivity and craving during presentation of stress scripts.

METHODS: Eighteen subjects were enrolled and 8 completed all four testing sessions. On each occasion, they were presented with a smoking cue condition (i.e. cigarettes) along with a neutral cue (i.e. pencils). They also listened to personalized stress and relaxation scripts. Heart rate (HR) and skin conductance response (SCR) were measured continuously for 90 seconds prior to and during each cue/script presentation. Pre and post measures of craving were collected as well. Data were analyzed using repeated-measure ANOVAs.

RESULTS: Females showed decreased HR reactivity relative to males in response to the smoking cue, F (1.6) = 6.37, p < .05, but not the neutral cue. No gender differences in craving were noted. Results of the Script conditions indicated that women showed lower levels of HR reactivity to scripts in general, regardless of script condition, F (1.6) = 7.16, p < .05. Women reported greater craving relative to men in response to both the stress and relaxation scripts, F (1.6) = 14.27, p < .01.

CONCLUSION: Although data are preliminary, it is notable that gender differences are evident despite the small sample size. Implications for further studies will be discussed.

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RP-054  STABILITY OF IMAGERY-INDUCED TOBACCO CRAVING RESPONSES ACROSS MULTIPLE SESSIONS

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Imagery scripts containing smoking-related cues are often used to elicit craving in tobacco smokers. The purpose of this study was to examine the stability of imagery-induced tobacco craving across several weeks. Participants (N=15) were non-abstinent smokers who were tested on five separate sessions over the course of 2-4 weeks (mean = 25 days). Imagery scripts were recorded on CD, and subjects were instructed to imagine themselves in the scene as they listened to each script. At each session, participants imaged six scripts: two containing no smoking imagery (no craving), two describing a person experiencing a moderate urge to smoke (low craving), and two describing strong smoking urges (high craving). Following each script, participants completed the 12-item Tobacco Craving Questionnaire (TCQ) and several Visual Analog Scale (VAS) questions to evaluate craving and mood. Data from the TCQ and craving-related VAS items showed that the magnitude and craving-intensity (no, low, high) pattern of participants’ responses remained stable across the five sessions. Pairwise comparisons revealed that the high-craving scripts elicited significantly greater craving scores across all sessions compared to no- and low-craving scripts. These results were similar for each of the four factors of the TCQ (emotionality, expectancies, compulsion and purposefulness). Across sessions, ratings of negative mood tended to be higher following the high-craving scripts compared to no- and low-craving scripts, and this response pattern also was stable across sessions. These data indicate that repeated assessment of cue-elicted craving can be accomplished without the potential confounds of habituated (decreased) or sensitized (increased) responding.

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RP-055  DISTAL SMOKING CUES: ENVIRONMENTS AS CUES TO SMOKE

Cynthia A. Conklin, Ph.D.*, Kenneth A. Perkins, Ph.D., and Nathalie Robin, B.S.

Cue-reactivity studies have demonstrated that smokers are highly reactive to smoking-related cues most proximal to drug administration (e.g., lit cigarettes, pictorial stimuli of smoking paraphernalia). However, following a quit attempt, such cues may no longer be present (e.g., smokers throw away their cigarettes), so that distal cues, those farther away from actual smoking behavior, might serve as more crucial triggers motivating relapse post-quit. One common distal cue is the specific environments in which smoking occurred. The present study involved the development of a standardized set of pictorial smoking- and neutral-environment cues to be used in a future study examining the role of environments on smokers’ conditioned responding. Following overnight abstinence, seventeen smokers completed this one-session within-subject study during which they viewed and vividly imagined being in 16 different environments devoid of proximal smoking cues (i.e. no cigarettes, ashtrays, etc. were present). Sitting in front of a 21-inch screen, smokers saw four different angles of each of 8 smoking environments (e.g., car, bar, coffee shop) and 8 neutral environments (e.g., church, shower, museum) for a total of 16 trials. As expected, smokers demonstrated stronger craving in response to viewing smoking environments compared to neutral environments, F (1,14) = 27.3, p < .001. These findings demonstrate that, similar to proximal smoking cues, exposure solely to environments distally associated with smoking can evoke strong craving to smoke. Examples of stimulus materials and the subjective and physiological results of the study will be presented and discussed.

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RP-056  INDEPENDENT COMPONENT ANALYSIS OF BOLD fMRI TO CIGARETTE STIMULI: IDENTIFYING THE BRAIN REGIONS ACTING AS A FUNCTIONAL UNIT IN RESPONSE TO SMOKING CUES

Teresa Franklin*, Vince Calhoun, Kent Kiehl, Jason Gray, Nathan Sciortino, Anna Rose Childress

A primary characteristic of nicotine and other drug dependence disorders is the potential of drug-related cues to trigger drug-seeking and drug-taking behavior. Neuroimaging studies of the brain response to drug cues (e.g., cocaine, opiates, cigarettes) has often revealed increased activity in brain regions (amygdala, anterior cingulate, ventral medial prefrontal cortex [VMPFC], insula, etc.) important for the anticipation and evaluation of biologically significant events. Identifying regions that operate as a coherent functional unit during cue-induced craving will be useful in identifying potential targets for “anti-craving” treatments. Independent component analysis (ICA) can be used to examine functional connectivity during exposure to cues, identifying spatially separate brain regions that act together over time. Eleven Smokers and eleven Nonsmokers were exposed to sequential 10-minute nonsmoking and smoking videos during BOLD fMRI sessions. Twenty independent components were generated for each group. Of particular interest were components which were either more prominent in, or unique to, Smokers versus Nonsmokers. In the Smokers, a functional component featuring the VMPFC and portions of the anterior and posterior cingulate was more prominent than in the Non-smokers, consistent with the role of these regions in the evaluative (VMFPC) and attentional (anterior cingulate) response to cigarette cues. Strikingly, a component containing the amygdala, the dorsal lateral prefrontal cortex and the cerebellum was unique to the Smokers, underscoring the importance of these regions as a target for anti-craving interventions.

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RP-057  
**NICOTINE PATCH REDUCES EYE-GAZE BIAS TO SMOKING PICTURES: IMPLICATIONS FOR CRAVING**  

Effects of nicotine patch on eye-gaze bias for smoking pictures were assessed with a two-picture paradigm. Smokers (N=18) participated in a two-session, within-subjects design with an active 14 mg Nicoderm nicotine patch on one day and a placebo patch on the other (patch order = random). Patches were applied 4 hours prior to task initiation. Eye-gaze was sampled 30/sec with an infrared system for the 2-sec duration dual picture presentations– one picture in the left visual field (LVF) and another in the right visual field (RVF). Half of the dual pictures had a neutral control picture in one VF and a picture with smoking stimuli (e.g., a person inhaling smoke from cigarette) in the other VF. The other half had control pictures in both VFs. The 48 dual pictures were from the color images of the International Smoking Image Series (Gilbert & Rabinovich, 1999). An ANOVA of the second factor of a principal components analysis of the gaze bias to smoking pictures across the 2-second dual picture epochs revealed that nicotine, relative to placebo, reduced gaze time directed to smoking pictures relative to the neutral pictures, F(1,17) = 6.61, p = .02. This tendency of nicotine to decrease attention to smoking stimuli may account for the ability of nicotine to reduce craving in situations allowing attentional choice.  

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RP-058  
**GENDER DIFFERENCES IN FACIAL EMG FOLLOWING NICOTINE ADMINISTRATION AND DEPRIVATION DURING AFFECTIVE SLIDE VIEWING**  
Jason D. Robinson*, Paul M. Cinciripini, Brian L. Carter, Cho Y. Lam, David W. Wetter, University of Texas M. D. Anderson Cancer Center  

Corrugator supercilii (frown muscle) and zygomaticus major (smile muscle) EMG have been found to increase with negative and positive affect, respectively. Studies suggest that the impact of nicotine on affect may be more salient for women than for men. We used facial EMG to evaluate whether nicotine given to 12-hr deprived and nondeprived smokers would produce greater reduction in averse responding (decreased corrugator, increased zygomaticus) in women than men. Smokers (n=17) participated in a 2 (Nicotine Spray: nicotine, placebo) x 2 (12 hr Deprivation: deprived, nondeprived) x 3 (Slide Valence: positive, aversive, neutral) repeated measures design during four laboratory visits. Nasal spray was administered blindly to smokers prior to slide viewing. The men and women did not differ on cigarettes smoked, FTND, or CESD scores. Nicotine-deprived women showed decreased corrugator response following nicotine spray compared to placebo spray during negative slides. Across spray type, women produced smaller zygomaticus values during negative slides when nicotine deprived than when nondeprived. Men did not demonstrate facial EMG differences in response to nasal spray or deprivation status. In addition, nicotine nasal spray produced increased heart rate compared to placebo spray, regardless of deprivation status, for both men and women. Skin conductance did not interact with nicotine administration or deprivation for men or women. These results suggest that for women, compared to men, nicotine significantly reduces the aversive qualities of negative stimuli.  

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RP-059  
**STARTLE POTENTIATION AND SELF-REPORTED DEPRESSIVE SYMPTOMS IN SMOKERS**  
Cho Y. Lam*, Ph.D., Paul M. Cinciripini, Ph.D., Brian L. Carter, Ph.D., Jason D. Robinson, Ph.D., and David W. Wetter, Ph.D.  

A positive relationship exists between depression and smoking. A significantly larger proportion of smokers than nonsmokers have been diagnosed with major depressive disorder and self-reported depression predicts nicotine withdrawal and relapse during a quit attempt. The startle eyeblink response (potentiated in the presence of avertive affective stimuli and attenuated in the presence of positive stimuli) is an empirically validated measure of emotional reactivity that has previously been shown to be a reliable index of negative affect in nicotine-deprived and nondeprived smokers. This study examined startle eyeblink response in smokers with varying degrees of self-reported depressive symptoms. Smokers were randomly assigned to either quit smoking (n = 70) or to continue smoking regularly (n = 46). Participants in the quit condition received counseling to help them quit. Participants completed four laboratory sessions at identical time points (corresponding to baseline, 2, 6, and 15 days postquit for the quit smoking group) in which they viewed positive, aversive, and neutral pictures while orbicular EMG was being measured. Results showed that smokers with high prequit distress measured at baseline exhibited significantly larger startle responses than those with low or no distress. Furthermore, at two days postquit, among participants with high levels of prequit depressive symptoms, those who quit smoking at that time but eventually relapsed demonstrated a significant increase in startle potentiation than those who quit successfully and those who continued smoking. The results suggest that startle potentiation is a sensitive index of prequit depressive symptoms and that these symptoms influence the relations between affective processes and quitting.  

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RP-060  
**RECENT DEPRESSIVE SYMPTOMS IN WOMEN PREDICT FAILURE TO QUIT SMOKING: RESULTS OF A WEB-BASED CESSATION STUDY**  
Jackie Stoddard, Ph.D.*, Ricardo F. Muñoz, Ph.D., M.D., Kevin Delucchi, Ph.D.  

Information about depressive symptoms in persons trying to quit smoking may help health care professionals better tailor smoking cessation advice. Our objective was to estimate the likelihood of making a quit attempt and abstaining from smoking in women who enrolled in a Web-based study for smoking cessation study according to their major depressive episode (MDE) status and menstrual cycle-related depressive symptoms. Of the 1,390 women who were eligible for and provided a premenstrual distress questionnaire (PDQ), 579 (42%) provided 1-month follow-up and 315 (22%) provided 6-month follow-up data. Similar follow-up rates were obtained for women completing the MDE questionnaire and participants of our larger study. Demographic characteristics and smoking behaviors were similar for both women who did and did not complete follow-up questionnaires. Those with severe ratings of menstrual-cycle-related depression were less likely to report having made a quit attempt or being abstinent at one and at six months follow-up. Women with a current MDE were less likely to have made a quit attempt or maintained abstinence at one month, but not at six months. Based on these results, we conclude that identifying recent depressive symptoms, whether associated with a prolonged or transient exposure, may help health professionals to better tailor smoking cessation advice, potentially leading to improved cessation rates.  

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RP-061  A RE-ANALYSIS OF HITSMAN ET AL.'S “HISTORY OF DEPRESSION AND SMOKING CESSATION OUTCOME: A META ANALYSIS”

Andrew Bomback, M.D.*, and Lirio Coney, Ph.D.

BACKGROUND: A recent meta-analysis concluded that a history of major depressive disorder (MDD) does not influence smoking cessation. This analysis, however, was conducted upon combined samples of control and experimental groups and may be compromised by a methodological confounder. Because the included trials examined experimental treatments with antidepressant properties (e.g. nortriptyline, bupropion, CBT), an effect of active therapy on the co-morbid disorder, not seen with placebo, is plausible. We performed a re-analysis of the data with the hypothesis that (1) among subjects on placebo, those with past MDD would have a lower quit rate than those without past MDD, and (2) among subjects on active treatment, those with and without past MDD would have similar quit rates.

METHODS: Of the fifteen studies evaluated by Hitsman et al., we included only those that delineated both randomization and cessation outcome by depression history. We also included a study by Smith (2003), published after the Hitsman meta-analysis. For our eight selected studies, we calculated individual and combined odds ratios (OR's), stratified by placebo or active treatment, of quit rates for smokers with and without past MDD.

RESULTS: For short-term (<3 months) quit rates, the combined OR's for the association of MDD history with cessation were: placebo = 0.90 (95% CI 0.59-0.94); active = 0.78 (95% CI 0.59-1.04). For long-term (>6 months) quit rates, the corresponding combined OR's were: placebo = 0.43 (95% CI 0.20-0.94); active = 1.05 (95% CI 0.76-1.46).

CONCLUSIONS: Our re-analysis suggests that MDD history significantly reduces the likelihood of short- and long-term smoking cessation for subjects on placebo. Subjects with past MDD, when given active therapies, have quit rates similar to subjects without past MDD.

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RP-062  SEX-SPECIFIC COGNITIVE-MEDIATIONAL MODELS OF SMOKING MAINTENANCE

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It has been suggested that male smoking behavior is more likely to be motivated by nicotine-based reinforcement whereas female smoking behavior is more likely to be motivated by affect regulation. Using cognitive-mediational models found in the substance abuse literature, we performed structural equation model analyses to examine potential sex-specific models of smoking maintenance. Assessments were collected from a treatment-seeking sample of 743 (49% female) daily smokers who were completing a screening appointment for a smoking cessation clinical trial. We examined a negative affect model whereby cognitive/personality variables, life stress, emotional distress, and coping were hypothesized to exert their influence on nicotine use and anticipated treatment outcome, via smoking expectancies (for affect regulation). As hypothesized, negative affect models were more predictive of patterns of nicotine use and anticipated treatment outcome for women then for men, although partial mediation was found to be a better fit. Secondly, we examined an enhanced reinforcement model whereby parental nicotine and alcohol use, alcohol use, cognitive/personality variables and initial reactivity to nicotine were hypothesized to exert their influence on smoking behavior and anticipated treatment outcomes, via nicotine expectancies (for positive reinforcement). As hypothesized, enhanced reinforcement models were more predictive of patterns of nicotine use and anticipated treatment outcome for men than for women. Overall, these results clearly demonstrate the importance of sex-specific effects in predicting smoking maintenance and provide informative models for treatment development.

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RP-063  TRAJECTORY FROM FIRST CIGARETTE TO DAILY SMOKING IN A TREATMENT-SEEKING SAMPLE: DO GIRLS PROGRESS FASTER?

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Understanding the developmental trajectory of adolescents seeking smoking cessation treatment is essential for prevention and treatment efforts. Smoking histories, including trajectory, were gathered from prospective adolescent candidates requesting treatment in a cessation study. Age of first cigarette, age at daily smoking (which was used as a proxy for tobacco dependence), and age at cessation treatment request were obtained and then analyzed by gender. Of 638 treatment-seekers, girls made up 378 (59%) of the sample. The mean age at first cigarette was similar for both boys and girls (12.21± SD1.1 years). Analysis of variance showed that the timeframe from first cigarette to daily smoking was 0.9 ± SD 1.1 years for girls and 1.3 ± SD 1.5 years for boys (p < 0.01). Daily smoking to treatment request was 2.4 ± SD 1.7 years for girls and 2.3 ± SD 1.8 years for boys (p=0.7763). In this treatment–seeking sample, findings suggest a shorter window of opportunity for preventive intervention before the development of tobacco dependence in girls compared to boys. Nonetheless, gender comparisons of the developmental trajectory of tobacco use in the broader population of adolescent smokers are needed.

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RP-064  SMOKING FOR WEIGHT CONTROL: EFFECT OF IMPLICITLY PRIMING FOR BODY IMAGE IN RESTRAINED EATERS

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Women are more likely to believe that smoking helps to control their weight (Brandon & Baker, 1991), to be concerned about post-cessation weight gain (Pirie, Murray & Luepker, 1991), and to identify weight gain as the cause for relapse to smoking (Swan, Ward, Carmelli et al., 1993). The primary aim of this study was to examine the effect of an implicit prime for body image on weight control expectancies for smoking in restrained and non-restrained eaters. Participants were 40 females, who were daily smokers, and on average 20.30 years of age (SD = 4.27). Subjects were presented with a bogus task of rating slides; half of the subjects viewed 30 slides of nature scenes (control group); the other half viewed 30 slides depicting fashion models (experimental group). Subjects then completed questionnaires that assessed smoking expectancies, smoking history, and eating restraint. As hypothesized, restrained eaters who viewed the slides depicting models had greater likelihood ratings that smoking helps to control appetite and manage weight, in comparison to restrained eaters who viewed the control slides and non-restrained eaters (who viewed either type of slides). There were no other group differences across other smoking expectancy factors. Images similar to those used in tobacco advertising targeting women had the ability to elicit stronger beliefs that smoking is beneficial for weight control in a group of women who are at heightened risk for such beliefs.

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RP-065  
**COST-EFFECTIVENESS OF PHARMACOTHERAPIES FOR NICOTINE DEPENDENCE IN PRIMARY CARE SETTINGS: A MULTINATIONAL COMPARISON**

Jacques Cornuz, Allison Gilbert, Christophe Pinget, Fred Paccaud

**BACKGROUND:** Pharmacologic smoking cessation therapies have been demonstrated to be cost-effective in single settings, but no comparative analyses have been conducted to examine variations across countries.

**METHODS:** We estimated the incremental cost-effectiveness of the first-line pharmacotherapies (nicotine gum, patch, spray, inhaler, and bupropion) for smoking cessation across six Western industrialized countries: USA, Canada, UK, France, Spain, and Switzerland.

Using a Markov-chain cohort model to simulate two cohorts of smokers: 1) a reference cohort given brief cessation counseling by a general practitioner; and 2) a treatment cohort given counseling plus pharmacotherapy. Effectiveness was expressed as odds ratios for quitting associated with pharmacotherapies and costs based on the additional physician time required and retail prices of the medications.

**RESULTS:** The cost per life-year saved for counseling ranged from US dollars 190 in Spain to 773 in the UK for men, and from 288 in Spain to 1168 in the U.K. for women. The incremental cost for gum ranged from 2230 for men in Spain to 7643 for women in the UK; for patch from 1758 for men in Spain to 5131 for women in the UK; for spray from 1935 for men in Spain to 7969 for women in the US; for inhaler from 3480 for men in Switzerland to 8700 for women in France; and for bupropion from 878 for men in Spain to 2922 for women in the US. In sensitivity analysis, changes in discount rate, treatment effectiveness, and natural quit rate had strong influences on cost-effectiveness.

**CONCLUSION:** The cost-effectiveness of the pharmacotherapies varied significantly across the six study countries, however, in each case, the results would be considered favorable as compared to many other common preventive pharmacotherapies.


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RP-066  
**TOBACCO USE AND POLICIES IN SAN DIEGO AND TIJUANA: A COMPARATIVE ANALYSIS**

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San Diego and Tijuana are twin cities at either side of the U.S.-Mexico border. Our Behavioral Ecological Model predicts that residents in these cities will differ in their use of tobacco, exposure to environmental tobacco smoke (ETS), and home bans on smoking, due to unequal exposure to community-wide tobacco control efforts. This study compares preliminary data from two ongoing population surveys among Mexican-descent residents in San Diego (N = 399) and Tijuana (N = 178). After controlling for demographics, Tijuana residents are more likely than San Diego residents to report daily (O.R.=2.92, p<.006) or occasional (O.R.=2.59, p<.03) smoking, and regular exposure to ETS in their home (O.R.=2.72, p<.001; workplace (O.R.=1.91, p=.04), a car (O.R.=2.78, p<.001), and elsewhere (O.R.=2.17, p=.001). Tijuana residents are less likely to report a complete ban on smoking in their home (O.R.=0.26, p<.001) and workplace (O.R.=0.51, p<.013). Residents in both cities present significant differences in the reported density of smoke-free public places and access to tobacco cessation programs. Overall, the results support our hypothesis regarding differences in tobacco control measures, especially public policies and services, and their relation to the prevalence of tobacco use, ETS exposure, and use of home policies. Future analyses with final N sizes will allow further testing of this hypothesis. Final results will provide current population estimates for Mexican-descent residents in the two cities and provide directions for tobacco control.

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RP-067  
**SMOKING CESSATION COUNSELING BY ONCOLOGISTS IN RUSSIA**

Robert Schnoll, Ph.D.*, Paul F. Engstrom, M.D., Fox Chase Cancer Center; Somasundaram Subramanian, M.D., Lev Demidov, M.D., Biochlin Cancer Center, and Dustin Wielt, M.A., Fox Chase Cancer Center

About 40% of Russian cancer patients use tobacco, which reduces survival time, increases risk for a recurrence, and diminishes quality of life. Oncologists are well positioned to help lower this rate of tobacco use, since they have regular and long-term access to these patients. However, little is known about Russian oncologists’ level of training in providing smoking cessation counseling, their current practices, or factors associated with the provision of cessation assistance to patients. This study surveyed 47 Russian oncologists about their training and practices in tobacco use and cessation treatment. Analyses indicate that: 1) less than 25% of oncologists are taught about the negative effects of tobacco and about methods for treating nicotine addiction; 2) only 11% of oncologists regularly assess tobacco use among patients, 41% provide a cessation message, and 7% discuss nicotine replacement therapy; 3) 36% of oncologists report that counseling patients to quit smoking is not part of their job, 36% say they lack the confidence to counsel patients to quit smoking, 36% report that such counseling will be ineffective, 34% said a lack of training prevents counseling, and 72% report that lack of time prevents counseling; and 4) a greater likelihood that physicians would provide cessation counseling is related to the greater belief that providing counseling is part of their job, confidence in providing cessation counseling, belief that counseling can be effective, and greater time to provide counseling (p’s<.01). These findings can guide the development of smoking cessation intervention training programs for oncologists in Russia.

A US federal appropriation to the American Russian Cancer Alliance supported this study.

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RP-068  
**TOBACCO USE AMONG CANCER PATIENTS IN RUSSIA**

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Developing inexpensive and effective strategies to lower smoking in Russia, where the prevalence of smoking is especially high, is a priority. One potential approach involves targeting smoking interventions toward cancer patients who may be particularly receptive to smoking interventions. However, since little is known about the smoking behavior of Russian cancer patients, a gap in the literature prevents the designing of appropriate interventions. This study: 1) examined the prevalence of tobacco use among Russian cancer patients (N = 271); 2) characterized the stages of readiness to quit among current or former smokers, and 3) assessed medical, demographic, and psychological correlates of smoking status and readiness to quit. Analyses indicate that: 1) 41% of patients smoke; 2) 20% of patients are in precontemplation, 27% are in contemplation, 21% are in preparation, 11% are in action, and 21% are in maintenance; 3) patients who smoke exhibit lower knowledge of the harmful effects of smoking, pros of quitting, perceived risks of continued smoking, and quitting self-efficacy, as well as higher cons of quitting, fatalistic beliefs, and depressive symptoms, versus former and never smokers (p’s<.01); 4) current smokers are older and more likely to be male, have either lung or colorectal cancer, and have advanced disease; and 5) a greater readiness to quit smoking is related to lower cons of quitting, fewer depressive symptoms, and an earlier age of initiation. These findings facilitate comparisons between Russian and US cancer patients and can help guide the development of interventions for Russian cancer patients who smoke.

A US federal appropriation to the American Russian Cancer Alliance supported this study.

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**RP-069**  
**SELF-MEDICATING BEHAVIOR AND TOBACCO USE AMONG CANCER PATIENTS IN RUSSIA**

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About 40% of Russian cancer patients use tobacco, which reduces survival time, increases risk for a recurrence, and diminishes quality of life. The lack of data concerning correlates of tobacco use in this population presents an empirical gap that, in turn, prevents the development and implementation of potentially effective smoking cessation interventions in this context. One potential important correlate of tobacco use in this population is self-medicating behavior (e.g., smoking to relieve symptoms of emotional distress). We examined the relationship between self-medicating behavior and tobacco use among 114 Russian cancer patients who smoke. Our analyses indicate that: 1) patients who report smoking regularly exhibit higher levels of self-medicating behavior, compared to patients who have cut-down or have recently tried to quit smoking; 2) patients who report an intention to quit smoking exhibit lower levels of self-medicating behavior, versus those who report no intention to quit smoking; 3) a greater past quit duration was reported by patients who exhibited a lower level of self-medicating behavior; 4) a higher level of self-medicating behavior is related to a greater number of years of tobacco use and a higher level of nicotine addiction; and 5) a higher level of self-medicating behavior is related to a lowered level of self-efficacy to quit smoking, a higher level of fatalism about one's health and diagnosis, and a higher level of cons of quitting (p’s < .05). These findings will be used to guide the development of smoking cessation intervention programs for Russian cancer patients who smoke.

A U.S. federal appropriation to the American Russian Cancer Alliance supported this study.

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**RP-070**  
**ENGAGING DOCTORS TO PROMOTE EVIDENCE-BASED TOBACCO PREVENTION AND TREATMENT IN THE CZECH REPUBLIC**

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PRE-GRADUATE EDUCATION: collaboration of all 7 medical faculties, a tobacco education responsible person on each of them (nominated by the Dean). Individual epidemiological work of medical students aimed on smoking: 1. Offers personal experience, e.g., with prevalence or opinion or knowledge of population groups, 2. Way of intervention (hospitals, pubs, smokers, pregnant women, students) 3. Getting epidemiological data and learning about using them, e.g. the prevalence of smoking among health professionals since 1990, their knowledge and attitudes concerning treatment possibilities. Possibility for students to present this work (like here).

POST-GRADUATE EDUCATION: * Working Group for the Prevention and Treatment of Tobacco Dependence at the Czech Medical Association (CMA) since 2000. * Repeated publication of the current treatment guidelines, endorsed by the CMA (booklets or in medical journals edited by the CMA, including one page summary about 4A/5A Method), monthly publication in collaboration with Tobacco Control Resource Center and British Medical Association (translation). Collaboration in the frame of European Forum of Medical Associations. * Regular press conferences in the Medical House on different topics (working medicine, ophthalmology, osteology, genetics etc.) * Endorsing legislation: a draft of a complex tobacco control law based on FCTC, including payment to doctors for treatment of F 17 and reimbursement for medication to patients * Asking the medical community not to take tobacco money* Regular courses (twice a year, two days) in the Postgraduate Education Institute Planning Tobacco Dependence Center for Treatment of Tobacco Dependence at each big hospital – now about 60 smoking cessation clinics across the country are based on voluntary activity only (no reimbursement). * Foundation Life without Tobacco (2003) aimed at above-mentioned activities.

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**RP-071**  
**THE FISCAL COSTS AND BENEFITS OF A COMPREHENSIVE TOBACCO CONTROL PROGRAM IN ONTARIO, CANADA**

Andra Ghent, M.A., University of California at San Diego; Roberta Ferrence*, Ph.D., Ontario Tobacco Research Unit, University of Toronto; Ted Bawady, M.D., Ontario Medical Association; Frank Chaloupka, Ph.D., University of Chicago at Illinois, et al.

The costs of smoking in Ontario are estimated at $3.7 billion or almost 1% of GDP, including $1.1 billion in direct health care costs. While tax increases are known to deter smoking, the fiscal impact of other smoking reduction measures has received less attention. We examine the fiscal impact of a comprehensive tobacco control program for Ontario, Canada. We investigate whether the fiscal benefits accruing to the provincial government in the form of reduced health care expenditures and higher income and sales tax revenue justify the investment in a comprehensive tobacco control program. We also assess the impact of the program on the government’s tobacco tax revenue and examine the effect of the program on the Ontario tobacco industry and the Ontario micro-economy. Based on a benchmark forecast of a 15% reduction in prevalence over five years, and including only health care savings as the benefit, the net present value of the project is $900 million, a three-fold return on investment. Including changes in provincial sales tax, income tax and tobacco tax revenue increases the net present value to $16 billion, a fiscal benefit-cost ratio of 28. The program will also prevent 3,000 premature deaths and eliminate 140,000 hospital days in the first ten years. Our findings provide strong support for the benefits of investing in comprehensive tobacco control programs and should be generalizable to other developed countries.

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**RP-072**  
**ON THE FRONT LINE OF TOBACCO CESSION—EDUCATIONAL AND TRAINING NEEDS OF CANADIAN PHARMACISTS**

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Pharmacists are among the first to be consulted for professional tobacco cessation advice. However, the training and educational needs of pharmacists with respect to tobacco cessation remain largely unstudied in Canada. This study examines the training and information needs of pharmacists, the preferred vehicle by which to deliver this information, and associations with demographic and physical environment variables. A detailed questionnaire was mailed to a random sample of community pharmacists practicing in four Canadian provinces. The response rate was 72% (N=996). Associations with demographic and environment variables were analyzed using ANOVA or Chi-Square tests as appropriate. Pharmacists would like to receive information about all tobacco-related topics surveyed. Additional information or training on behavioural techniques for quitting smoking was judged extremely helpful by 49.7% of all pharmacists, regardless of years practiced, province, or pharmacy setting. Pharmacists who would like more information on NRT and bupropion are likely to have practiced longer (p<0.01) and practice in independent pharmacies (p<0.01). Pharmacists who want to learn about motivating patients to quit are likely to have practiced for a shorter time (p<0.01). Continuing education workshops were the most preferred method of information delivery (85.9%); university short courses and pharmaceutical detailing are considered helpful by the smallest percentage of pharmacists (63.9%, and 71.1% respectively). Canadian pharmacists have clearly identified needs for education on smoking cessation. Pharmacists practicing longer want information on pharmaceutical approaches, while newer pharmacists want training in motivating patients to quit.

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RP-073  CALIFORNIA CONSUMERS’ ATTITUDES TOWARD TOBACCO SALES IN COMMUNITY PHARMACIES

Christine Fenlon, B.F.A., Karen Hudmon, Dr.P.H., R.Ph.,* Yale University School of Medicine; Robin Corelli, Pharm.D., University of California San Francisco School of Pharmacy

Although pharmacists are recognized members of the health-care system, most community pharmacies in the U.S. sell tobacco products. The primary reason cited by drugstore management for the continued sales of tobacco products is concern of losing business (i.e., profits). A statewide study was conducted to characterize the attitudes of California consumers toward the sale of tobacco products in drugstores and to determine whether removal of tobacco from drugstores would affect consumer shopping behavior. A total of 702 telephone interviews were conducted through random digit dialing in 8 counties across California in April 2003. Results suggest that 72% and 87% of consumers are not in favor of tobacco sales and tobacco advertising in drugstores, respectively. Nearly all (97%) consumers stated that if their drugstore stopped selling tobacco products, they would shop there the same (80%) or more often (17%). Among smokers, 78% reported that they ‘rarely’ or ‘never’ buy tobacco products at drugstores. These results are consistent with those of our similar, parallel surveys conducted in 1997 and 2000. In conclusion, it appears that if California drugstores stop selling tobacco products, they will lose almost no business, and their position will be supported by public opinion in California.

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RP-074  ASSESSING STRENGTH OF SUPPORT FOR REDUCING CHILDREN’S EXPOSURE TO SECONDHAND SMOKE: A COMMUNITY LEADER STUDY IN ATLANTA, GA

Katherine M. Edmonds*; Paul D. Mowery, M.A.*, RTI; Neil Shulman, M.D.

The study was designed to measure support among metropolitan Atlanta community leaders for reducing children’s exposure to secondhand smoke in their homes. Community leaders in Atlanta and surrounding counties were identified via snowball sampling methods. Thirty-seven eligible respondents were interviewed. Respondents were program managers from city and county health departments, voluntary organizations, coalitions, and elementary school administrators, school nurses, and leaders of parent teacher organizations. Semi-structured interviews were conducted over the telephone between July 18, 2003 and August 6, 2003. Respondents were asked about activities designed to reduce secondhand exposure sponsored by their organization. We asked about priority given to secondhand smoke exposure, support among constituents, and perceived effectiveness of specific interventions. Respondents were also asked what advice they would give community organizations interested in working with parents to reduce children’s exposure. Interviews lasted approximately 10 minutes. Among community leaders with responsibility for tobacco control programs, over 50% gave preventing secondhand exposure to tobacco smoke a higher priority than other public health activities conducted by their organizations. Across all respondents, most reported that their constituents strongly support interventions to reduce children’s exposure. Respondents rated counseling of parents by physicians and other health care workers as the intervention most likely to reduce secondhand exposure among children. In addition to clinician counseling of parents, respondents believed that working with community-based organizations such as parent teacher organizations should be a priority.

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RP-075  EFFECT OF NEW YORK STATE CLEAN INDOOR AIR LAW ON EMPLOYMENT, ALCOHOL EXCISE TAX COLLECTIONS AND NUMBER OF ALCOHOL SERVING ESTABLISHMENTS

Mark J. Travers*, Michael Cummings, Ursula Bauer, Andrew Hyland

The New York State Clean Indoor Air Act was amended to replace a patchwork of county-level smoking regulations took effect on July 24th, 2003 and prohibits smoking in indoor public places including bars and restaurants. In response to anecdotes about businesses failing because of the law and in an effort to objectively quantify the economic impact of the law, we examined employment data from the New York State Department of Labor, alcohol excise tax collections from the New York State Department of Taxation and Finance, and the number of licensed facilities serving liquor from the Division of Alcoholic Beverage Control of the New York State Liquor Authority. New York State employment in the Food Service and Drinking Places industry increased in each of the four months in 2003 since the law went into effect compared to the same months in 2002. The increases were 0.1% in August, 0.7% in September, 0.8% in October, and 2.1% in November. Total alcohol excise tax collections for August through November were 2.8% higher in 2003 compared to 2002. The number of on-premises liquor licenses in New York State increased 1.2% from October 2002 to October 2003. While these data do not rule out the possibility that individual businesses may be adversely affected by the smoking regulations, they do suggest a positive overall trend in the bar and restaurant industry in New York State since the new smoking regulations went into effect.

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RP-076  SMOKING CESSTION AND PERCEIVED HEALTH RISK FROM NICOTINE AND SMOKING AMONG BLACK AND WHITE SMOKERS

Jesse Mason, B.S.*, and Dorothy Hatsukami, Ph.D., University of Minnesota, Transdisciplinary Tobacco Use Research Center

Despite reporting a higher motivation to quit smoking and more quit attempts, African-Americans are less likely to achieve smoking cessation than their White counterparts. The purpose of this study was to compare indices of smoking cessation (e.g., motivation to quit, number of quit attempts, and reason for relapse) and perceived health risk from smoking and nicotine. Past studies have suggested that African-Americans may not be fully aware of the health consequences associated with cigarette smoking. We analyzed baseline data from a quitting smoking study. Data was gathered from 131 Black (75) and White (56) smokers. There were no significant differences in mean age of participants (X = 38.0 ± 9.8), age of smoking initiation (X =15.0 years ± 3.8), number of cigarettes smoked per day (20.0 CPD ± 10.5) and years of smoking at current rate (X= 12.0 ± 9.2). However, Whites reported an earlier age of regular smoking than African-Americans (16 ± 0.36 vs. 18 ± 0.63, p= .000). More African-Americans reported smoking mentholated cigarettes than their Whites (90.7% vs. 24.1%, p = .000). There were no significant differences in baseline indices of motivation to quit smoking, number of quit attempts, and indices of perceived health risk of nicotine alone. Though on most indices of perceived health risk from smoking there were no significant differences, more African-Americans perceived a moderate to very probable chance of developing cancer even if they stopped smoking compared to Whites (9 % vs. 2.5%, p =.042). In this study African-Americans and Whites were similar on most indices.

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RP-077  SPITWORLD: INTERACTIVE SMOKELESS TOBACCO PREVENTION AND CESSATION FOR ADOLESCENTS

Herbert Severson*, Christopher Williams, Deschutes Research Inc., and Steve Christiansen, Tom Jacobs, Widy Kek, InterVision

The authors developed an interactive smokeless tobacco (ST) prevention and cessation program for students in grades 6-8. This program utilizes computer-based technologies to deliver tailored content to prevent initiation and reduce use of ST among adolescents. The program, called SpitWorld, combines video, graphics, and text to educate middle school students about ST. The student is offered a choice of four gamelike activities that provide a range of resources that address the dangers of ST and contains a cessation program for those interested in quitting. The games include: The Fortuneteller (their future as a user or nonuser of ST), DipPix Photo Booth (pictures of health outcomes for four teen users), VR FlyThru Chew (virtual reality tour inside a tin of snuff), and X-Chew Challenge (cessation program using a baseball interface). We recruited 170 students in 6th, 7th and 8th grades and collected baseline information asking about prior experience with tobacco, attitude towards tobacco and intentions to use tobacco. Time spent in the program was tracked and related to baseline data. Upon completion, the students were queried about overall satisfaction, perceived value of the information, interest, and ease of use. The consumer satisfaction items attest to the perceived value of the program. The students gave an overall high rating, and would recommend it to others. Students found SpitWorld easy to use, and reported that they learned new information. Time engaged was related to overall satisfaction, but there were no gender or age differences. These results are encouraging, and speak to students’ receptivity to tobacco prevention information presented in an appealing gamelike format.

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RP-078  TOBACCO EXPOSURE DURING CHILDHOOD PREDICTS INCREASED OBESITY RISK IN ADULT MEN

Derek J. Snyder, M.S.*; Linda M. Bartoshuk, Ph.D., Sherry McKee, Ph.D., and Stephanie S. O’Malley, Ph.D., Yale University

Maternal smoking during pregnancy is linked to childhood obesity, but long-term effects on body mass remain unclear. Interestingly, these reports fail to consider the impact of tobacco use in the home, where chronic exposure throughout childhood may confer extended health risk. In particular, tobacco exposure promotes childhood ear infection. Sensory nerves from the mouth cross the middle ear, and our research indicates that severe childhood ear infections alter oral sensation; for men with many taste buds, these changes can promote fat intake and adult-onset obesity. Extending this model, we show that postnatal tobacco exposure contributes to increased body mass index (BMI) in adult men. Subjects (N=288) participated in a smoking cessation program; height, weight, family smoking history, tobacco use, and previous quit attempts were assessed. Tobacco exposure produced significant effects in men but not women, reflecting a robust sex difference. Adult men raised in homes with 2+ smokers during ages 1-10 had elevated BMIs compared with men raised among fewer smokers; they were also more likely to be overweight. Smoking cessation often produces weight gain, but these men were willing to tolerate the highest gains, including clinical obesity. Maternal tobacco exposure during childhood was associated with higher rates of quit-related BMI gain; prenatal exposure was unrelated to any adult BMI-related measure. We believe that postnatal tobacco exposure heightens obesity risk in adult men, presumably by supporting pathologic changes in oral sensation.

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RP-079  STAYING SMOKE-FREE: A ROLE FOR VISITING NURSES IN PREVENTING POST-PARTUM RELAPSE

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PURPOSE: To test the efficacy of a relapse prevention intervention during the postpartum home nursing visit. Methods: Women who quit smoking during pregnancy and were smoke-free for 7 days before delivery were recruited. 130 women were recruited and randomized to usual care or usual care plus intervention. The intervention consisted of 3 phone calls: a 15 minute structured interview and a 15 minute intervention using a home visit in the first two weeks post-partum (reinforcing smoke-free women, or encouraging cessation if relapse had occurred), and one to three follow-up phone calls as the nurse saw necessary. The outcome is saliva cotinine verified smoke-free status at 3 and 6 months post-partum. An intention to treat model was employed. Subjects lost to follow-up were assumed to be smokers. Comparison of proportions is done by chi-square.

RESULTS: After exclusions 97 women were eligible for inclusion in the comparison group. In the intervention group 127 women were eligible for inclusion. At three months the smoke-free rate in the intervention group was 25.6% vs 12.3% in the comparison group. (p=.017) At six months the smoke-free rate in the intervention group was 20.8% vs 11.3% in the comparison group (p=.068). Five (5.2%) women were smoke-free at both time points in the comparison group vs. 22 (17.6%) in the intervention group (p=.006). The intervention was well accepted by both subjects and nurses.

CONCLUSION: A brief intervention during routine newborn care and home visitation may substantially increase the smoke-free rate for new mothers who quit smoking during pregnancy.

Supported by Robert Wood Johnson Smoke Free Families and Children's Hospital Research Foundation.

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RP-080  SLEEP AND POSTPARTUM SMOKING RELAPSE

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Over half of women who quit smoking during pregnancy resume within the first six months postpartum. Insufficient sleep is a unique challenge during this period, and we hypothesize that it plays a role in relapse. Women presenting to an urban pediatric primary care clinic with their infants (<6 months) were recruited to participate in a survey of postpartum health behaviors. Refusal was low (1.9%). Participants (n=51, mean age=25.2) were an average of 11.3 weeks postpartum. The sample was ethnically diverse (51% Hispanic/Latina, 29% African American, and 20% Caucasian), and 78% had a high school education or less. Ten percent smoked throughout their pregnancy. Twenty-seven percent quit during pregnancy; of this group, 93% relapsed by the time of the assessment. Severity of sleep problems was unrelated to breast-feeding status or infant age. Smokers were somewhat more likely to have significant sleep disturbance than nonsmokers (chi square=2.74, p<.10). Among women who quit during pregnancy but relapsed postpartum, 62% reported significant sleep problems, and 77% indicated that sleep problems had an important influence on their decisions about smoking. All reported an interest in quitting. Those who indicated that sleep had an important influence on their smoking decisions had a higher rate of smoking (10.7 per day versus 4 per day; t=2.81, p<.05). In addition, relapers who suffered from sleep disturbance reported a greater likelihood that they would still be smoking in 6 months (t=2.63, p<.05). Although results are preliminary, they suggest that insufficient sleep plays a role in smoking decisions during this period. Relapers may be using smoking as a way combat sleep deprivation. Future work will involve a prospective longitudinal examination of insufficient sleep and mood disturbance as predictors of postpartum relapse.

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RP-081  
PREMENSTRUAL, CRAVING AND WITHDRAWAL SYMPTOMS AFFECT ON SMOKING RELAPSE  
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Clinical treatment studies for smoking cessation have shown that female smokers have greater difficulty quitting and are less successful than men in sustaining smoking cessation. Research has also shown that hormones may play a role for women, specifically, the menstrual cycle; and withdrawal may vary by menstrual cycle phase.

In the present study, nicotine craving, withdrawal and premenstrual symptoms were assessed daily for 30 days in 18-40-year-old women (n=30) to determine if there is a relationship between symptoms and relapse; also, to determine if these scores are higher overall for relapers than for those remaining abstinent.

Premenstrual symptoms using three subscales (pain, affect, and water) were assessed with the Premenstrual Assessment Form (PAF). Nicotine craving and withdrawal scores were measured with the Minnesota Withdrawal Symptoms (MNWS) checklist. Subjects began daily forms on an assigned quit day and continued for 30 days. Scores were standardized and compared across the group. Twenty-four women relapsed (had at least one puff of a cigarette) and six remained abstinent.

The results show that total PAF scores, PAF affect, craving and withdrawal increase on the day of relapse by an average of .54, .65, 1.02 and .94 standard deviation respectively. Results also show that absolute scores were higher for withdrawal (p=.001) and may have been higher for craving (p=.08) and PAF affect (p=.09) in those who relapsed than in those few who stayed abstinent. This suggests that those who relapse suffer greater premenstrual and withdrawal symptoms prior to relapse, which may contribute to their relapse.

Findings indicate that smoking cessation programs for women may need to consider premenstrual symptoms, craving and withdrawal more specifically.

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RP-082  
NORMALIZING EFFECT OF SMOKING ON BRAIN FUNCTION IN SCHIZOPHRENIA  
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The incidence of smoking in patients with schizophrenia is approximately three times higher than the normal population. Dysregulation of nicotinic receptors has been reported in schizophrenia, and possibly smokers with schizophrenia obtain a self-medication effect of nicotine. This study seeks to investigate the acute effects of cigarette smoking on regional cerebral blood flow in patients with schizophrenia, and to compare these effects with those obtained in previous studies with normal smokers. The O-15 bolus-water technique was used to assess regional cerebral blood flow (rCBF) before, and after, smoking one nicotine-containing cigarette. rCBF for various regions of interest was calculated by normalizing with respect to the mean value of left and right hemisphere grey matter. Data from four patients with schizophrenia analyzed thus far show a large post-smoking-enhancement in rCBF in the left hemisphere orbitofrontal cortex (+7%, p=.004), and decrease in rCBF in the left hemisphere cingulus (-12%, p=.0001). In both cases, smoking tended to normalize rCBF values to approximate those of nonpsychotic controls. These results suggest that smoking may be maintained at high rates in individuals with schizophrenia due in part to a modulation of brain activation related to attentional processes and frontal lobe executive function.

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RP-083  
SELECTIVE ATTENTION PERFORMANCE IN ADOLESCENT SMOKERS DURING NICOTINE REPLACEMENT TREATMENT  
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Acute tobacco withdrawal has been shown to decrease accuracy and increase response times on a visual scanning task in adult smokers, but few data are available for adolescent smokers. We hypothesized similar differences in performance in 88 adolescent smokers (mean age = 15.1 years) randomly placed into 3 nicotine replacement groups: patch (21 mg/day), gum (2 or 4 mg), or placebo. Performance data were collected at 72-h post-quit. The 2-Letter Search task required subjects to indicate the presence or absence of two target letters within a string of twenty letters. Decreased reaction time across trials was found, suggesting a learning effect; however, there was no difference in performance between the three treatment groups. One possible explanation for the lack of effect is that some of the participants in the placebo group continued to smoke during treatment. We thus examined a subset of 9 participants across the three treatment groups whose 72-h expired-air CO levels were less than or equal to 6 ppm and who reported no smoking during the 72-h assessment period. Similar results were found with these abstinent individuals, such that no performance differences were observed between the three treatment groups. Further investigation of the cognitive effects of acute tobacco withdrawal is needed using a larger sample of verified-abstinent adolescent smokers and tasks assessing various cognitive domains.

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RP-084  
DIFFERENTIATION OF NICOTINE EFFECTS ON COMPONENTS OF REACTION TIME  
Thomas S. Marzilli, Ph.D.*, and Kristie Willhoit, M.S., The University of West Florida

To further discriminate at what level of the central processing stream nicotine is most likely to effect, a basic chronometric approach to studying information processing was incorporated. This chronometric approach allowed for the independent examination of nicotine’s effects on two theoretically nonoverlapping information processing stages which include both stimulus identification and response programming. The subjects (N=8) completed two experimental sessions (Abstinent; Non-Abstinent) which were conducted one week apart. Each experimental session was comprised of two tests. The first test consisted of abstinent baseline measures, while the second test was administered after smoking an investigator supplied nicotine or denicotinised cigarette. Upon arriving to the laboratory following 12 hours of nicotine abstinence, subjects began 480 trials of a simple reaction time task that comprised two stimulus intensities (high and low) and four movement distances (0cm, 7cm, 15cm, and 23cm). Upon completing test 1, the subjects were given either a nicotine or denicotinised cigarette. After smoking the cigarette, subjects began test 2. Subjects again completed the 480 trials of the simple reaction time task. Data analysis revealed faster reaction times were elicited for the higher intensity stimulus as well as for the shorter movement distances; thus confirming both the stimulus identification and response programming stages of the information processing model were successfully manipulated. Furthermore, while the administration of nicotine significantly improved reaction time performance over baseline abstinent levels, this improvement was not differentially affected by the aforementioned information processing manipulations. These results provide initial evidence that nicotine may not differentially affect the individual components of a simple reaction time task.

This study was conducted while the first author was at The University of West Florida. Supported by NIDA Grant #1R03DA014310-01A2.

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Cigarette smoking has been shown to have a positive association with osteoporosis. Research has also shown that postmenopausal women who smoke have lower bone density than non-smokers. This pilot study examined the effects of quitting/reducing smoking on bone biomarkers, specifically serum osteocalcin and urinary N-telopeptide. Eighteen postmenopausal subjects completed through week 4 and seventeen completed the 12-week study protocol. Subjects attended eight clinic visits during the 12-week study period. They received NRT (4mg gum, or 7mg, 14mg, or 21mg patch tailored to each subject) and behavior counseling at each visit. Fastening serum osteocalcin and second morning void urinary N-telopeptide were measured at baseline, weeks 4 and 12. The average age was 53.6 (SD + 8.1). The mean number of cigarettes smoked per day was 20.2 (SD + 9.1) and the average Fagerstrom score was 5.8 (SD + 2.3). Results reported as percent change from baseline to testing in serum osteocalcin levels were greater among subjects who quit smoking (N=9) than those who reduced by at least 50% (N=9) at week 4 (19.7% v. -25.7%, p = 0.07). The same finding was also evident at week 12 (quit N=7, reduced N=7, 52.5% v. -9.3%, p=0.04). Urinary N-telopeptide percent changes were not significantly different between the two groups during the same time periods (11.4% v. -10.9%, p=0.131, -12.5% v. -7.8%, p=0.729 respectively). The results of this pilot study suggest smoking cessation affects bone biomarkers more than smoking reduction. The increase in serum osteocalcin suggests an increase in bone activity, which could potentially affect bone density. Future studies should further assess how smoking cessation/reduction will affect bone density and how nicotine plays a role.

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**RP-087 DIFFERENTIAL PERCEPTIONS OF ENVIRONMENTAL ATTITUDES TOWARDS SMOKING**

C. Cortigia, F. Martin, and F.J. Ayesta

7500 secondary students from the Spanish northern region of Cantabria (age between 13-18) were asked about: 1) the percentage of adults who are regular smokers; 2) the percentage of 14-18 y/o adolescents who either regularly smoke or have ever tried a cigarette; 3) the percentage of their teachers who are smokers or smoke in front of them.

RESULTS: 1) Girls believe that 69% of the adult population smokes; boys believe "only" 65% (p<0.01). The actual figure is 34%. No differences were found, either in boys or in girls, between smokers and non-smoker adolescents. 2) Whereas smoker girls believe that 69% of 14-18 y/o smoke, non-smoker girls believe that 61% do (p=0.001). Similar differences were found in boys (61% vs. 54%; p<0.01). Smokers also consider that a higher percentage of adolescents has ever tried a cigarette (p<0.001). 3) Whereas no differences were found between smoker and non-smoker adolescents in the perception of the percentage of smoker teachers (53% vs. 52% in girls; 50 vs. 51% in boys), the percentage of teachers who were described as smoking in front of the students was consistently and substantially higher in smokers than in non-smokers (21% vs 15%; p<0.001).

CONCLUSIONS: Regardless of being themselves smokers or not, adolescents greatly overestimate the percentage of smokers in the general population. Girls do it even more than boys. The denormalization of smoking behavior has not been attained in our country. Adolescent smoker refer a higher percentage of smoker adolescents and a higher percentage of teachers smoking in front of them. This may be a cause or a consequence of their own smoking. This work was not funded.

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RP-089  EFFECTIVE TOBACCO PREVENTION WITH HIGH RISK INCARCERATED YOUTH: RESULTS OF THE MARICOPA COUNTY PROGRAM

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A partnership between Maricopa County Tobacco Use Prevention Program and the Boys and Girls Clubs of Metropolitan Phoenix has enabled an effective tobacco prevention program to be institutionalized in the four juvenile detention facilities in Maricopa County. This study provides the details of program design, implementation and evaluation of providing an effective program with these high-risk taking youth. This innovative program combines tobacco use prevention information with sexual health prevention to try to reduce risk-taking behaviors of this population. Results: Approximately 800 Arizona youths aged 13 to 17 are in these four detention facilities. Mean length of stay is highly variable. Of the youth committed to residential facilities, approximately 90% of this group reports using tobacco with 78% defined as daily users. Most (60%) began use by age 10. While 45% stated that they wanted to quit using tobacco at pre-intervention, this increased to 70% at post-intervention. Other measures of post-intervention knowledge and attitude change demonstrate important increases about significance of the health effects of tobacco use. Sample statements by the youth include: “If you want to satisfy yourself and your girl, give up putting smoke inside your body,” “If you want to keep it up, better give it up.” Significant findings include intention beyond detection: “not smoking and being more conscious about my sexual activity,” “giving me some things to think about and apply to my life.” Conclusion: The combination of tobacco use and sexuality activity prevention has proven effective with a high-risk incarcerated youth population. Supported by Arizona Department of Health Services.

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RP-090  ASPIRE, AN INNOVATIVE COMPUTER-BASED SMOKING PREVENTION AND CESSION CURRICULUM FOR HIGH SCHOOL STUDENTS

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Although adolescent smoking shows a downward trend, a solution is far from being found. Smoking prevention and cessation programs, available today, do not consistently utilize state-of-the-art methods or modern computer technologies appealing to contemporary teens. Based on transtheoretical model of change and addiction model, an interactive, multimedia CD-ROM was developed called ASPIRE. This software assesses student’s smoking status, smoking acquisition and cessation stages, nicotine dependence, and depression. The program provides 8 educational “tracks” tailored to student characteristics. The ASPIRE program is administered in 5 classroom sessions, 30-40 minutes each. ASPIRE is being evaluated in a randomized controlled trial of 16 urban high schools comprising 1,608 students. Mean age is 15.67 (± 90) years; 58.8% female. Ethnic make-up: Hispanics (39.6%), African-Americans (39.6%), Caucasian (5.9%), and other (4.1%). Smoking status comprises: never smokers (57.6%), experimenters (31.8%), former smokers (3.6%), and current smokers (7.1%). Assessment points are baseline (Fall 2002); 6 weeks; 12 and 18 month follow-ups. Main outcome measures include smoking status, processes of change, nicotine dependence, and symptoms of depression. Biochemical validation of smoking status will be taken at 18-month follow-up. Other impact variables include self-efficacy, knowledge, skills, personal beliefs, and perception of parents’ and peers’ norms. This presentation will cover initial lessons learned and review preliminary results. Discussion will include first follow-up revealing susceptibility to smoking, restraint from experimentation and smoking acquisition rates. National Cancer Institute: R01 CA081934-04.

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RP-091  WEIGHT CONCERN AND GENDER PREDICT SMOKING STATUS IN CHILDREN

Darla Kendzor*, Donald Williamson, Ph.D., Scott Patterson, Aaron Clendenin, M.A., and Amy Copeland, Ph.D.

Previous research has indicated that weight concern may be important to our understanding of smoking initiation and maintenance in children, and that gender may play a role in this relationship. It was hypothesized that male gender and higher weight concern, as measured by the Children’s Version of the Eating Attitudes Test (CHEAT), would predict smoking in a sample of elementary school children. Further, it was expected that children who had smoked would score significantly higher on the CHEAT than those who had not, and that girls would score significantly higher than boys. Participants included elementary school children in grades 2-6 (n = 735) randomly assigned to an environmental tobacco or obesity prevention program. Logistic regression analysis revealed that gender [wald(1) = 3.938, p = .047] and CHEAT scores [wald(1) = 10.266, p = .001] were significant predictors of smoking at baseline. Boys were more likely to have smoked than girls, and higher CHEAT scores were associated with reports of smoking. A two-way analysis of variance (gender x smoking status) indicated a main effect for smoking status. Those who had smoked scored significantly higher on the CHEAT than those who had not smoked [F(1) = 7.131, p = .008]. Findings suggest that weight concern and gender are associated with smoking in children, and that weight concern varies by smoking status.

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RP-092  RISK AND PROTECTIVE FACTORS FOR SMOKING AMONG ADOLESCENTS WITH SAME-SEX ROMANTIC ATTRACTIONS OR RELATIONSHIPS

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This study presents national estimates of the relationship between risk and protective factors with smoking stage among youths aged 12 to 19 years. The study investigates whether this relationship differs between youth who report same-sex romantic attractions and relationships and other youth. Data are from the baseline wave of the National Longitudinal Study of Adolescent Health (Add Health). Risk and protective factors examined include parental smoking, parent/child activities, parental presence in the home, religiosity, weight concerns, emotional well-being, self-esteem, sports participation, school performance, and having friends who smoke. Smoking outcomes considered were past 30 day smoking, frequent smoking, and daily smoking. Because the Add Health sample is very large, we were able to identify approximately 1,500 youth who reported same-sex orientation. Sexual orientation was measured by two Add Health questions that asked respondents whether they (1) ever had same-sex romantic attractions and (2) had same-sex relationships within the past 18 months. Smoking rates were higher among those who self-reported same-sex romantic attractions or relationships. This was true for both girls and boys. The relative importance of risk and protective factors was similar for most variables. However, having only one parent in the home and mother’s ever smoking were less important risk factors for same-sex oriented youth. A low frequency of parent/child joint activities as well as parents frequently away from the home were more important risk factors for same sex oriented youth. Supported by Centers for Disease Control and Prevention.

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RISK FACTORS ASSOCIATED WITH ADOLESCENT SMOKING

Ronald Fischbach, Ph.D.*, Elio Spinello, M.P.H., Pamela Delaney, M.P.H., Roberta Madison, Dr.P.H.

This study identified the risk factors associated with smoking tobacco among students attending a summer high school program. Cigarette smoking is the single leading preventable cause of disease and premature death in the United States. Nearly, 50 million Americans smoke, among whom twenty percent are adolescents. The study population consisted of 684 adolescents between 13 and 18 years of age attending a culturally diverse urban high school. Teachers administered a written survey to students; odds ratios and confidence limits were calculated to examine key risk factors. Among various age cohorts, 17 year olds were significantly more likely (odds 1.8, 95%, CI 1.2, 2.7) to have ever smoked compared to other age groups. For all respondents, the presence of a best friend who smoked was a strong and consistent risk factor. Respondents with a best friend who smoked were 8.7 (95%, CI 5.5, 13.6) times more likely to have ever smoked. The existence of a household member who smoked was a key factor related to students who had smoked during the past thirty days, with the strongest associations being found with sisters who smoked (odds 2.9, 95%, CI 1.1, 8.0) and more associated with best friends who smoked (odds 26.1, CI 6.8, 105.5). Results of the study indicated that smoking interventions need to address the influence of peers and family members on adolescent smoking. Intervention strategies should consider the roles peers and family members play in the acquisition of smoking behavior. This may be accomplished by incorporating relationship development skills in tobacco education and community intervention programs.

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CARCINOGEN UPTAKE IN ADOLESCENT SMOKERS

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Limited data are available on carcinogen uptake in adolescent as compared to adult smokers. Furthermore, the effects of reducing smoking, on carcinogen levels have also not been explored. We investigated this question in two different studies, one with an adult population and one with the teenagers, by measuring levels of metabolites of tobacco-specific lung carcinogen NNK (NNAL plus NNAL-gluc or total NNAL per mg of creatinine) in the urine of adult and adolescent smokers who reduced their smoking over periods of several weeks.

METHODS: Measurements of the metabolites of NNK were taken during baseline smoking in adults and adolescents. Adolescents were required to reduce smoking over a period of 4 weeks. The data presented here is the preliminary results of the study. The primary outcome measure in this report is total NNAL per cigarette in comparison between the adolescents and adults, and total NNAL and total NNAL per cigarette for the adolescent cigarette reduction analysis.

RESULTS: The adolescent NNK uptake was not statistically different from the uptake of the adult population. Three subtypes of smokers were observed within the adolescents, in response to changes in smoking. The NNAL per cigarette increased in the first group most probably due to compensatory smoking behavior. The other two groups either showed no change in the NNAL levels or showed marked decrease in concordance with the decrease in their smoking pattern.

CONCLUSION: The preliminary data shows no difference between the adults and adolescents in terms of carcinogen uptake. Although a larger sample size will strengthen the results, there is a statistically significant difference between the baseline NNAL levels and their NNAL levels after cigarette reduction in the adolescent group.

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CO BOOST IN ADOLESCENT SMOKERS

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Carbon monoxide boost, the change in CO level measured in expired air before and after smoking a single cigarette, was measured in teen smokers during a laboratory study. CO boost was examined in relationship to withdrawal and smoking pattern self-report measures, demographics, baseline cotinine levels and abstaining from tobacco. A racially diverse sample (N=134, M age=16.0, 60.4% female) of current daily smokers was recruited. At baseline, study participants reported smoking an average of 9.9 cigarettes daily. Their mean CO level was 13.2 ppm and cotinine was 133.7 ng/ml. CO boost was found to correlate with self-reported depth of inhalation (p<0.05) and history of withdrawal symptoms (p<0.05). Females had a significantly larger boost than males (p<0.01). A subset of participants (N=60) was matched on age, gender and self-reported number of cigarettes smoked per day. They were randomly assigned to either smoke ad lib or abstain from tobacco for 15-17 hours prior to assessment. Abstainers were compared to ad lib smokers on CO boost. After covarying baseline cotinine level, abstainers had a greater CO boost (6.1 ppm) than ad lib smokers (4.8 ppm, p<0.05) in the laboratory. Participants’ CO boost was not found to correlate significantly with age, number of months daily smoking, number of cigarettes smoked daily, baseline CO, baseline cotinine or status as a marijuana smoker. Increased CO boost following withdrawal supports the reinforcing effects of smoking in adolescents. The validity of self-report measures of withdrawal and depth of inhalation are strengthened by these findings.

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TREATING ADOLESCENT SMOKERS: DOES THE PATCH MATCH?

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Treatment research in adult smokers indicates that the efficacy of nicotine replacement therapy (NRT) relies on maintaining pre-treatment nicotine levels, which are a function of the frequency and intensity of smoking. We hypothesized a similar relationship for adolescents receiving nicotine replacement therapy, where baseline smoking rates and puff topography would predict cessation outcome. Thirty-four treatment-seeking adolescents (mean age 15.4, SD 1.4; mean cigarettes per day 17.6, SD 6.4; mean Fagerstrom Test for Nicotine Dependence 7.0, SD 1.1) were enrolled in the active patch group (21 mg/day) of a three-group clinical trial investigating the efficacy of NRT. Smoking rates and puff topography (CRESS) measures were obtained prior to randomization. Cessation outcome was assessed through self-report and biochemical verification of prolonged abstinence. We analyzed smoking rates by categorizing participants as light (<16 cigarettes per day) versus heavy smokers (>16 cigarettes per day). Chi Square analysis revealed an association between the heaviness of smoking and cessation outcome (Fisher’s Exact p=0.046). Analysis of variance showed that low puff volume and duration predicted successful abstinence (p=0.014, 0.035 respectively). While supporting the predictive value of baseline smoking rates and puff topography, these data also suggest that, similarly to adult smokers, some adolescents may require more than the standard 21 mg/day patch for adequate nicotine replacement. We will examine this more closely with cotinine levels. Controlled studies with a broader range of adolescent smokers are needed to generalize these relationships.

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RP-101  CIGARETTE SMOKING AND HEALTH-RELATED QUALITY OF LIFE (HRQOL) IN A COLLEGE STUDENT POPULATION

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This study assessed whether the negative effects on HRQOL that are observed in current smokers in the general population also exist in a population of younger smokers. We received 1,171 usable surveys from a web-based survey. All undergraduate students on campus (about 11,000) were emailed once and directed to the survey website. Approximately 30% of the respondents were classified as current (past 30-day) smokers, comparable to recent campus surveys. Students were classified as never smokers, former regular smokers, and current smokers. Current smokers were subsequently classified as light, moderate, and heavy smokers. The SF-12v2 was used to assess HRQOL. MANCOVA (adjusting for age and gender) indicated overall differences among the groups across the eight SF-12v2 scales and the two summary measures. The groups were statistically different in five of the eight SF12v2 scales and in one of the two summary measures, the mental component summary measure. All results showed lower HRQOL scores among current smokers. Results paralleled studies of general adult populations demonstrating that smoking is more strongly associated with the mental rather than the physical dimensions of HRQOL. The nature of the relationship between smoking and mental health requires further exploration. This study suggests that smoking may affect HRQOL in younger smokers. HRQOL represents individuals' subjective assessments of their functioning on several health dimensions and may be more salient for patients. Thus, knowledge of the impact of smoking on HRQOL may be useful for helping people quit and in public health campaigns.

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RP-102  CAMPUS SMOKING POLICIES AND STUDENT TOBACCO USE AT 30 NORTHWEST COLLEGES

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Tobacco use among college students and other young adults increased significantly throughout the 1990s and, while still high, has begun to decline since 2000. It is thought that the recent and widespread adoption of restrictive smoking policies on college campuses, particularly smoke-free housing, may be contributing to this trend. Few studies, however, have measured the relationship between multiple policies restricting smoking on campus and student tobacco use behaviors. This paper examines strength of tobacco-related campus policies, students' cigarette smoking, other tobacco use and intention to quit, using survey data from key informants (n=69) and students (n=14,158) at 30 Northwest colleges. The colleges are participating in the CHAT (Campus Health Action on Tobacco) Study, which is testing a comprehensive, campus-based smoking prevention and cessation intervention. We found that stronger smoking restrictions inside campus buildings (p=.043), outside (p=.035) and within student housing (p=.005) were all independently associated with lower cigarette smoking prevalence. Desire to quit was marginally related to strength of policy in student housing (p=.068). Small portions of students used cigars (7.4%), cigarillos (2.6%), pipe tobacco (1.9%), clove cigarettes (4.3%), and chewing tobacco (3.3%).

In general, use of these products was not associated with policy. These findings suggest that both indoor and outdoor campus smoking restrictions are inversely associated with tobacco use among college students.

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RP-103  VALIDITY OF A 12-ITEM, BRIEF VERSION OF THE TOBACCO CRAVING QUESTIONNAIRE

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The Tobacco Craving Questionnaire (TCQ) is a 47-item self-report instrument that assesses tobacco craving along four dimensions: emotionality, expectancy, compulsivity, and purposefulness. Reliability and validity of the TCQ have been established in several studies. For practical use in research and clinical settings, we constructed a 12-item version of the TCQ by selecting three items from each of the four factors that exhibited optimal within-factor reliability (Cronbach's alpha coefficient) and inter-item correlation. We present data on the validity of this brief version. Smokers (n=142) completed the TCQ-12 after overnight tobacco deprivation and on a separate day during ad lib smoking. Scores on each factor were significantly (p < .001) greater after tobacco abstinence than ad lib smoking. We used maximum likelihood factoring with oblique rotation to estimate parameters of common factor models for both experimental conditions. A correlational matrix matching the exact loadings of the 4-factor, 47-item TCQ was the target specification. Confirmatory factor analysis of the TCQ-12 indicated good model fit in the deprived condition and suggested a reasonably close model fit for the ad lib smoking condition. Cronbach's alpha coefficients and average inter-item correlations were similar in both conditions and were consistent with reliability values obtained in the initial validation of the TCQ. These findings indicate that the 12-item TCQ is valid and reliable as the 47-item TCQ.

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RP-104  DEVELOPMENT AND VALIDATION OF A SELF-RATED DSM-BASED SCALE FOR ASSESSING NICOTINE DEPENDENCE

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The DSM approach to diagnosing nicotine dependence involves a lengthy structured interview designed to be administered by a trained interviewer. To meet the need for a brief case-finding tool that can produce a preliminary diagnosis for clinical or research purposes, we developed a 13-item pencil-and-paper self-rating scale based on DSM-IV criteria. Using a computer-administered adaptation of the structured interview (CIDI) as the gold standard, we conducted field-testing and preliminary validation of the Nicotine Dependence Scale (NDS) in 252 current smokers. The mean (±SD) age of the sample was 37 yrs ±11 years. Forty-nine percent of the sample was male. They smoked a mean (±SD) of 17.5 ±8.9 cigarettes/day and had a mean (±SD) Fagerstrom Test for Nicotine Dependence score of 4.3 ±2.3. The CIDI scored 134 (53%) as Nicotine Dependent. Sensitivity was improved to 79%, but specificity was 62%. If the number of withdrawal symptoms present within the past 12 month period required to meet dependence criteria is reduced to 3, the NDS scored 176 (70%) as Nicotine Dependent. Sensitivity was improved to 79%, but specificity was reduced to 40%. The accuracy of the NDS using various cut points as measured by the area under the ROC curve was .691. 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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**RP-105**

**SELF-REGULATION AND TOBACCO USE QUESTIONNAIRE: DEVELOPMENT AND VALIDATION**

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This study assesses the validity of a new scale designed to measure individuals' ability to manage their cognitions, emotions, and behaviors associated with tobacco use among smokers. It also examines the relationship between scores on the new scale and level of smoking. Undergraduate students earned course credit by completing a self-administered battery of assessments. 129 students (34%) reported smoking cigarettes on one or more of the past 30 days and were used for this analysis. Iterated principal factor analysis with normalized oblique transformations was used to identify factors and select items and Cronbach Coefficient Alpha assessed internal consistency. The final scale consists of 13-items. Each item uses a 7-point likert-type scale with higher scores indicating greater self-appraised self-regulatory ability (Alpha=0.94). The scale has three factors. Factor 1 contains 8 items related to stopping or reducing tobacco use (Alpha=0.94). Factor 2 contains 3 items related to seeking help (Alpha=0.90). Factor 3 contains 2 items related to peer pressure (Alpha=0.87). All three factors were significantly negatively correlated with number of cigarettes smoked per month (p-values ranged from <0.0001 to 0.0083). As hypothesized, students who were more confident in their ability to self-regulate their tobacco use were more likely to smoke fewer cigarettes per month. The development of a tobacco-specific instrument to assess self-regulation may increase researchers' ability to understand the role of self-regulation in smoking and to design effective interventions to improve self-regulation and decrease tobacco use.

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**RP-107**

**ESTABLISHING VALIDITY AND RELIABILITY OF ASSESSMENT INSTRUMENTS FOR TREATING OLDER MINORITY SMOKERS**

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The increase in older minority populations is striking. As a result of this rapid growth, they will require more health and mental health services as they grow older. Despite these aging and ethnic population shifts, there is a paucity of information on health programs and smoking cessation programs in particular for them. Optimal care required appropriate assessment of this population, as well as assessment instruments that are culturally, ethnically, and age-specifically appropriate for the older adult. This project is the first of its kind to address this problem, and establish a set of criteria for assessing older tobacco users. This project was an ideal partnership between a health sciences academic institution and the diverse community it serves. It was funded by a National Institute on Aging grant, and the Resource Center for Minority Aging Research at Columbia University to expand health research to minority populations. As a result of this project, five assessment instruments were designed specifically for this population, translated into Spanish, and tested for reliability and validity. A sample of older smokers from the community was then interviewed using instruments never before validated for this population. Two researchers conducted 30 interviews simultaneously to establish inter-rater reliability, as well as item validity. Students in Dentistry, Medicine, Nursing, and Social Work were trained in the culturally sensitive assessment and treatment of older minority tobacco users. Initial pilot results will be presented which indicate the need for a culturally sensitive assessment protocol in the areas of depression, social support, and the management of stress and anxiety.

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**RP-106**

**A CONFIRMATORY FACTOR ANALYSIS OF THE FAGERSTRÖM TEST FOR NICOTINE DEPENDENCE (FTND) IN AN ADOLESCENT POPULATION**

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The Fagerström Test for Nicotine Dependence (FTND) has been widely used for measuring the level of nicotine dependence in adult populations. Although nicotine dependence is thought to be a multidimensional construct, theory and empirical evidence are lacking as to what, specifically, those dimensions are. Some have suggested that the FTND measures a single dimension of nicotine dependence related to nicotine intake. Others suggest the FTND assesses two dimensions: (1) urgency to restore nicotine to threshold levels upon waking (after night-time abstinence) and (2) persistence of nicotine maintenance at threshold level during waking hours. Radzius et al (2003) provides evidence that a two-factor structure fits the data better than a one-factor solution in an adult sample. While the FTND was not developed to measure nicotine dependence in an adolescent population, a few studies have examined its use with this age group. This study will present the first examination of the factor structure of the FTND in an adolescent population. This analysis tested the proposed two factor structure of Radzius et al (2003) to data from an adolescent sample. The data for this analysis comes from a study sponsored by the American Legacy Foundation to validate youths self-reports of smoking status. The students were in schools selected to match index schools from the National Youth Tobacco Survey (NYTS). Salivary cotinine was collected from students, who also filled out a paper questionnaire similar to the NYTS instrument. Given the dichotomous and categorical response categories of the items that make up the FTND, EQS was used to perform confirmatory factor analysis. Findings support previous work which suggests the FTND measures two dimensions of the nicotine dependence construct.

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